II. AFFECTED ENVIRONMENT

The purpose of this chapter is to describe the characteristics of the area that is to be served or affected by the proposed project. The discussion is divided into the following 11 topical sections:

To establish a baseline against which to evaluate project impacts, the project area was inventoried for social, cultural, and natural resources. Relevant features present in the study area are discussed in this chapter and shown on the inventory maps included as Exhibit II-2 and Exhibit II-3.

Chapter IV, "Environmental Consequences," addresses the environmental impacts associated with the proposed project as they relate to these issues and others.

II.A SOCIAL/ECONOMIC

The following social/economic characteristics of the project area are described in this section: Population, Economic, Neighborhoods and Other Development Concentrations, Public Facilities/Services, Highway and Other Transportation Data, and Local Planning.

II.A.1 Population

Census data from the 2000 US Census were used to identify population characteristics and trends of the City of Macomb and McDonough County. Both the population as a whole and the prevalence of three social groups are described. Updates and projections from state and local sources supplement the US Census data, as appropriate. Table II-1 summarizes the population and population characteristics of the State of Illinois, McDonough County, the City of Macomb and the affected US Census Block Groups within which the project corridor lies.

The City of Macomb is the largest city within McDonough County (18,558 in 2000). It contained 56 percent of the total population of McDonough County in 2000. In 2000, 5,823 persons lived in the rural census block groups containing the project corridor. Most of the 2000 population in the block groups containing the project corridor was White (96.9 percent).

The 1999 median family income in those blocks ($56,058) was higher than the median family income for McDonough County ($43,385) and the City of Macomb ($42,069). The percent of households (**7.0** percent) within the project corridor with incomes below the Department of Health and Human Services' Poverty Guidelines was lower than that for either the City of Macomb

Table II-1. Population, Race, Income, and Age

Category		State of Illinois	McDonough County	City of Macomb	Total Population of Block Groups in Project Corridor
Total 2000 Population		12,419,293	32,913	18,558	5,823
Race (2000)	White	9,125,471(73.5%)	30,568 (92.9%)	16,467 (88.7%)	5,643 (96.9%)
	Black or African American	1,876,875 (15.1%)	1,138 (3.5%)	1,101 (5.9%)	58 (1.0%)
	Asian	423,603 (3.4%)	664 (2.0%)	568 (3.1%)	81 (1.4%)
	American Indian & Alaskan Native	31,006 (0.2%)	47 (0.1%)	29 (0.2%)	5 (0.1%)
	Native Hawaiian & Other Pacific Island	4,610 (<0.1%)	12 (<0.1%)	6 (<0.1%)	5 (0.1%)
	Two or More Races	235,016 (1.9%)	330 (1.0%)	259 (1.4%)	23 (0.4%)
	Other	722,712 (5.8%)	154 (0.5%)	128 (0.7%)	8 (0.1%)
	Hispanic or Latino (of any Race*)	1,530,262 (12.3%)	488 (1.5%)	389 (2.1%)	43 (0.7%)
Income	1999 Median Family Income (MFI)	$55,545	$43,385	$42,069	$56,058
	Percent 2000 **Families** with Income Below Poverty Guidelines Level**	**9.9%**	**13.3%**	**17.0%**	**7.0%**
Age (2000)	Under 20	3,605,506 (29.0%)	8,526 (25.9%)	4,686 (25.2%)	1,320 (22.7%)
	20 – 44	4,646,387 (37.4%)	13,463 (40.9%)	8,976 (48.4%)	1,514 (26.0%)
	45 – 64	2,667,375 (21.5%)	6,272 (19.1%)	2,601 (14.0%)	1,628 (28.0%)
	65 +	1,500,025 (12.1%)	4,652 (14.1%)	2,295 (12.4%)	1,361 (23.4%)

* Hispanic or Latino population numbers are a subset of the other race classifications listed.

** Department of Health and Human Services' Poverty Guidelines for a family of four in **2004 i**s **$18,850**. Website: aspe.hhs.gov/poverty/**04poverty.shtml.**

Census Block Groups included within the project corridor are171090110001, 171090110002, 171090107002, 171090103003, 171090103001, and 171090103002. All survey and census results contain measurement error and may contain sampling error.

Source: US Bureau of the Census, 2000 Census of Population and Housing, Summary File 1 (Matrices P1, P3, P4, and P12), Summary File 3 (Matrix P76), and the 2000 Census of Population and Housing, website www.census.gov.

(**17.0** percent) or McDonough County (**13.3** percent). No concentrations of low value homes were observed during project surveys. The project corridor had a higher percent of persons 65 and over (23.4 percent) compared to McDonough County (14.1 percent), and the City of Macomb (12.4 percent).

Total Population

The 2000 population of the State of Illinois was 12.4 million. The 2000 population of McDonough County was 32,913. The County's 2000 population represents a decrease of 2,331 people from the 1990 population of 35,244. This represents a loss of 6.6 percent.

The majority of the population of McDonough County resides within Macomb, the largest city in the County, and also the County seat. The City of Macomb had a population of 18,558 in 2000, 56 percent of the County population. This represents a decrease of 1,394 people or 7.0 percent from 1990 population of 19,952.

Macomb is also the home of Western Illinois University. Enrollment patterns at Western Illinois University affect population trends in both the City of Macomb and McDonough County.

The project corridor traverses US Census Block Groups that are rural in character. As such, the population within the project corridor is substantially lower than in nearby Block Groups in the City of Macomb. (See Table II-1.)

Racial and Ethnic Characteristics

The majority of the population of the City of Macomb and McDonough County is White. African-Americans make up the largest minority racial group within the City and County. In 2000, the African-American population of the City was 1,101, or 5.9 percent of the total, whereas in the County the African-American population was 1,138, or 3.5 percent of the total. Within the census blocks of the project corridor, one percent of the 2000 population was African-American.

People of Asian descent comprise the next largest minority racial group within the County and City and they are the largest minority group within the project corridor. This group consisted of 664 individuals and represented 2 percent of the County's population in 2000. The 568 people of Asian decent within the City limits comprised 3.1 percent of Macomb's population. Eighty-one individuals of Asian descent, or 1.4 percent, made up the population within the census blocks of the project corridor.

All other racial or ethnic groups made up one percent or less of the City's, County's, or project area's population in 2000. One percent of the County's population and 1.4 percent of the City's population belonged to two or more races. One and one-half percent of the County's population and 2.1 percent of the City's population identified themselves as also being of Hispanic and Latino decent. Within the project area, 43 individuals, less than one percent of the population, identified themselves as also being of Hispanic and Latino decent and less than one percent belonged to two or more races.

Much of the African-American population and the Asian population are associated with Western Illinois University, primarily enrolled as students. There are no concentrations of any one racial or ethnic group within the project corridor.

Elderly and General Age Characteristics

Age characteristics for the City, County, State, and US Census Block Groups are shown in Table II-1. Forty-eight percent of the population was aged 20 to 44 in the City of Macomb in 2000. In the city, 14 percent were ages 45 to 64 and 12 percent of the population were aged 65 and over.

McDonough County's age breakdown showed 41 percent of the population aged 20 to 44, 19 percent 45 to 64 and 14 percent age 65 and over. Distributions in the under-20 age category show 25, 26, and 29 percent for the City, County, and State respectively.

In 1996, the Illinois Institute for Rural Affairs reported that since 1980, the number of elderly people living on farms within McDonough County has steadily been increasing. In particular, there has been a marked increase in the number of residents 85 years old or older. The Illinois Institute for Rural Affairs concluded that the majority of these people were aging in place, rather than migrating to the County from elsewhere. They also reported an increase in the average age for people living on farms, attributed in part to the movement of younger people leaving farms.

II.A.2 Economic

The economies of the City of Macomb and McDonough County are influenced by several factors. Major economic influences for the City and County include retail sales, services, agriculture, and Western Illinois University. Macomb's status as the county seat of government also influences its economy. Its location at the crossroads of major highways and railroads also has been a factor in the economy of the City.

The labor force in McDonough County was 17,952 in 2000. All but one of the major employers in McDonough County were in the City of Macomb. The largest employer in the City of Macomb was Western Illinois University, a government sector employer. A Tax Increment Financing (TIF) district and an Enterprise Zone are in Macomb, to promote business and industrial growth.

Retail, Wholesale and Industrial Businesses

The Economic Profile of McDonough County, prepared by the Illinois Department of Commerce and Community Affairs (2003) indicates that the largest industries in the City and County in 2000 were in the area of State and local governments. This industry accounted for 36.4 percent of earnings. Retail businesses accounted for 19.7 percent of earnings in 2000, and service related industries accounted for 12.0 percent.

Retail and wholesale businesses in the project area are generally within the City of Macomb. Retail and wholesale trade has increased in Macomb since 1990. The development along East Jackson Street (U.S. 136/U.S. 67) is primarily retail. The largest retailer in the City is the Wal-Mart Supercenter. The Wal-Mart is on East Jackson Street, east of Macomb at Bower Road and is presently expanding (May 2003). The Dayton-Hudson Corporation operates a Big K-Mart discount center, also on East Jackson Street, east of town. The Big K-Mart is the second largest retailer in Macomb. The introduction of discount stores has made Macomb a regional trade center for surrounding areas. There also is a concentration of auto retailers along US 136/US 67 immediately east of town.

The Macomb Area Industrial Development Corporation indicates that there has been steady growth in industrial development in recent years. Much of this has occurred along the Burlington Northern Santa Fe (BNSF) railroad tracks, which run diagonally through Macomb from the southwest to the northeast. Industrial expansion has occurred along Bower Road as well, east of Macomb. The City and County established the Macomb/McDonough County, Illinois Enterprise Zone in 1995 along the BNSF railroad corridor. The boundaries of the Enterprise Zone are shown on Exhibit I-5. The goal of the Enterprise Zone is to promote industrial and economic development within its boundaries. According to the Macomb Area Industrial Development Corporation, the Enterprise Zone has been moderately successful, with 14 new businesses locating there in 1995, its first year of operation.

There are no retail, wholesale or industrial businesses in the project corridor.

Labor Force and Employment Trends

Labor force and employment trends for McDonough County and the City of Macomb were analyzed using data from the 2000 US Census (US Bureau of Census), the US Department of Commerce, Bureau of Economic Analysis (2003), and the Illinois Institute for Rural Affairs (2003). Information used came from the Macomb Area Chamber of Commerce (1984, 1989 and 2003), the Macomb Community Development Coordinator as well as other sources.

The total number of full and part-time employees in McDonough County was 15,934 in 2000. In 2000, direct farm labor made up four percent of the employees in the county. This represented a decrease of four percent over a ten-year period. This figure does not include related agribusiness involved in processing of farm products. Retail and wholesale trade accounted for 20 percent of those employed in 2000. This represents a continuation of a steady rate of growth from estimates in 1986, 1990, and 1992. The Illinois Institute for Rural Affairs canvassed employers and determined that much of the increase in retail and wholesale employment was a result of an influx of part-time employees who were students at Western Illinois University. Manufacturing accounted for 11 percent of total employment in McDonough County, and services accounted for 24 percent of total employment. Table II-2 presents the number of employees by occupation category.

In 1990 (the most recent data available), 2,061 employees commuted to McDonough County from adjacent counties. Of these, 642 (31 percent) were commuting to destinations within the City of Macomb. The furthest commuters were from Springfield, Illinois.

Table II-2. Occupation (Persons 16 Years and Over)

	State of Illinois	McDonough County	City of Macomb	Total of Block Groups in Project Corridor
Managerial and Professional	1,993,671 (34.2%)	5,307 (33.3%)	2,960 (34.4%)	1,325 (45.6%)
Sales and Office	1,609,939 (27.6%)	3,950 (24.8%)	2,275 (26.4%)	738 (25.4%)
Service	813,479 (14.0%)	3,155 (19.8%)	2,014 (23.4%)	292 (10.1%)
Farming, Forestry, and Fishing	17,862 (0.3%)	207 (1.3%)	116 (1.3%)	23 (0.8%)
Construction, Extraction, and Maintenance	480,418 (8.2%)	1,238 (7.8%)	458 (5.3%)	226 (7.8%)
Production, Transportation, and Material Moving	917,816 (15.7%)	2,077 (13.0%)	789 (9.2%)	299 (10.3%)
Total	5,833,185 (100%)	15,934 (100%)	8,612 (100%)	2,903 (100%)

Source: 2000 US Census (US Bureau of Census, 2000)

Other than several family farms, there are no major employment concentrations within the project corridor. An industrial area lies approximately 1.6 kilometers (one mile) west of the corridor, along the BNSF railroad tracks at Bower Road. NTN-Bower Corporation, the second largest employer in the City of Macomb and McDonough County, has expanded their business on Bower Road, which now includes their corporate headquarters. NTN-Bower Corporation is currently the largest manufacturing based employer in Macomb. Another employer near the project corridor is the Macomb Municipal Airport. It is approximately 1.8 kilometers (1.1 miles) north of the corridor, off US 67 at Airport Road.

Table II-3 lists the top ten employers in McDonough County. None is within the project corridor. All but one are within the corporate limits of Macomb. The single largest employer in McDonough County is Western Illinois University. Since 1996, enrollment has increased at Western Illinois University. In 1990, total student enrollment was 13,754. Total enrollment declined to 12,184 in 1996, and it has steadily increased to 12,934 in 1999. The 2002 enrollment of 13,461 students is an increase of 1.9 percent over the 2001 number of 13,206. In 1996, Western Illinois University became home of the St. Louis Rams National Football League summer training camp. The population and economy of Macomb and McDonough County is inextricably tied to the University.

Table II-3. McDonough County Major Employers in 2002

Company	Estimated Employment
1. Western Illinois University (Macomb)	2,282
2. NTN-Bower Corporation (Macomb)	574
3. McDonough County Hospital (Macomb)	565
4. SODEXHO Marriott Services (Macomb)	417
5. Macomb Community School District (Macomb)	356
6. Hy-Vee Food Stores	350
7. County of McDonough (Macomb)	310
8. Vaughn & Bushnell Mfg. Co. (Bushnell)	300
9. Wal-Mart Stores, Inc. (Macomb)	260
10. Porcelain Products Company (Macomb)	204

Compiled by the Illinois Department of Commerce and Community Affairs (updated 2002) with cross-reference to Macomb Area Industrial Development Corporation (MAIDCO) website.

Economic Development Planning

Since 1990, the City of Macomb and McDonough County have experienced a slight decline in population, and a shift in employment trends. The City of Macomb, McDonough County, and Western Illinois University have taken several actions to increase economic development in the area. The McDonough County Economic Development Commission developed the Overall Economic Development Program in 1980 and 1981. In 1984, the commission updated the plan. The Overall Economic Development Program identified a well-developed highway system as essential to economic growth for the City of Macomb, McDonough County, and western Illinois.

The City of Macomb has established a Tax Increment Financing (TIF) District in the downtown area surrounding the McDonough County Courthouse. The intent of this TIF District is to spur renovation of existing buildings where possible, and redevelopment where appropriate. The TIF District is split by the BNSF railroad tracks, with approximately nine blocks surrounding the courthouse on the south side of the railroad tracks and seven blocks immediately north of the tracks. Exhibit I-5 shows the TIF District. The City established the Macomb Downtown Development Corporation to foster growth in the downtown core, particularly the area around McDonough County's courthouse square.

The Macomb Area Industrial Development Corporation was established in 1983 to foster industrial development within the City of Macomb. The Macomb/McDonough County, Illinois Enterprise Zone was established in 1995, as described above under "Retail, Wholesale and Industrial Businesses."

East of the City, plans call for an industrial park near US136/US 67, along Bower Road. It is between the existing industrial area along the BNSF railroad tracks and a strip of existing auto retailers on the north side of US 136/US 67, just west of the project corridor. This industrial park lies within the boundaries of the Enterprise Zone.

The Macomb, Illinois Comprehensive Plan (City of Macomb, 1989) is the current planning document for the City. One of the goals of the Comprehensive Plan is to provide opportunities which foster economic growth and prosperity in Macomb, furthering the economic well-being of the City's residents. A Unified Development (Zoning) Code adopted in 1998 is used in conjunction with the Comprehensive plan to guide development.

In 1998, the Illinois Institute for Rural Affairs, along with the City of Macomb and McDonough County, conducted the Strategic Visioning and Planning Project (MAIDCO, 1990), a three-day planning session to develop strategies for economic growth in the region. One of the outcomes of the Strategic Visioning and Planning Project was the identified need for an improved highway transportation system.

Additional information regarding land use planning, development goals and economic growth may be found in Section II.A.6, "Local Planning."

II.A.3 Neighborhoods and Other Development Concentrations

The project corridor traverses a primarily non-urban area. The predominant land use is agricultural. Macomb is the largest city in the region. The City is divided into several neighborhoods, however, none of which are in the proximity of the project corridor. Exhibit II-1 shows the location of residential concentrations and major businesses in and near the project corridor. Land owned and used by Western Illinois University is the single largest non-residential/non-agricultural land use within McDonough County. In addition to Western Illinois University, other major single land use concentrations near the project corridor include the Spring Lake Recreation Area and the Macomb Municipal Airport.

Residential Concentrations

Six subdivisions are in proximity to the western segment of the project corridor (IL 136 to US 67). Georgetown Subdivision is a townhouse development south of Adams Street, approximately 1.8 kilometers (1.1 miles) east of the project corridor. Meadowbrook Subdivision is a medium density single family detached development north of Adams Street, approximately 2.1 kilometers (1.3 miles) east of the project corridor. Macomb Country Estates Subdivision is a large lot subdivision consisting of single family homes. This subdivision is 550 meters (1,800 feet) east of the project

corridor, immediately north of Grandview Drive. A townhouse condominium development called Stratford West is approximately 400 meters (1,300 feet) east of the project corridor on CH 14 and south of Grandview Drive. An unnamed large lot single family residential subdivision is being developed along the south side of Adams Street, adjacent to Meadowbrook Subdivision to the north and Georgetown Subdivision to the west. This development is 2.1 kilometers (1.3 miles) east of the project corridor. The Deer Ridge subdivision and man made lake are within the proposed path of the bypass north of Adams Street.

East of US 67, there is a small, unnamed cluster of residential units at the intersection of the proposed project and US 67. The Green Acres residential area is approximately 350 meters (1,100 feet) south of the project corridor and 1,200 meters (3,900 feet) east of US 67 on Springlake Road. The Green Acres Subdivision is comprised of a mix of single-family homes and mobile homes.

Other Urban Concentrations in or Near the Corridor

A mix of industrial land uses occurs along the BNSF railroad tracks, which run diagonally from the southwest to the northeast, through the center of Macomb. There is a concentration of industrial businesses along the BNSF railroad tracks at the intersection of Bower Road and University Drive, approximately 1.6 kilometers (one mile) west of the east leg of the project corridor.

At the terminus of the project corridor at US 136/US 67, there is a group of automobile retailers. These are immediately west of the project corridor. The US 136/US 67 corridor, on the east side of Macomb, has experienced rapid expansion of commercial development over the past five years. The Macomb Area Chamber of Commerce and the Macomb Area Industrial Development Corporation have indicated that this corridor is the major thrust of commercial growth in the area.

Within the City of Macomb, Western Illinois University is the single largest non-residential land use. Western Illinois University is on the northwest side of the City. Western Illinois University operates a small agricultural research farm east of Wigwam Hollow Road, south of Tower Road. The farm lies near the eastern edge of the project corridor. In 1999, the University acquired a second farm, off of Tower Road west of Wigwam Hollow Road. University personnel indicated that these farms (totaling approximately 230 acres) and their golf course do not lie within the path of the proposed bypass. There are no immediate plans to acquire additional land for the university in this area.

The Macomb Municipal Airport is north of the project corridor, along Airport Road, due east of US 67. Smith Airfield, a private airport, is at the eastern terminus of the project corridor, at the intersection of US 136 and US 67. Section II.A.5, under “Airports,” describes the characteristics of the airports and their development plans.

Other Commercial and Institutional Centers in the Macomb Area

A second concentration of commercial development, but outside the project corridor, occurs along US 136, west of Macomb. This area consists primarily of service-related industries and retailers of non-durable goods. The McDonough District Hospital is a major medical center complex on the southeast side of the City of Macomb. It is on Grant Street, an east-west arterial that runs along the south side of Macomb. The McDonough District Hospital is approximately 1,075 meters (3,500 feet) south of US 136/US 67, approximately 2.4 kilometers (1.5 miles) west of the eastern terminus of the project corridor. The hospital also has direct access to the western terminus of the project corridor, via Grant Street and Deer Road (Lakewood Drive). Grant Street ends approximately 600 meters (2,000 feet) directly south of the western terminus of the project

corridor. A second institution of higher education, Spoon River College, is approximately three blocks southwest of the courthouse in downtown Macomb.

A landfill is on the west side of Bower Road, 1.7 kilometers (1.1 miles) south and 1,200 meters (3,936 feet) west of the project corridor, on the east side of Macomb. Environfill Corporation privately owns and operates this landfill. It accepts waste from the City of Macomb and nearby areas of McDonough County.

II.A.4 Public Facilities/Services

Macomb Community Unit School District 185 serves the City of Macomb and areas surrounding the project corridor. Public facilities and community services include worship centers, recreational/park areas, emergency and public service groups, community organizations and utility providers. No public facilities or community services facilities are within the project corridor.

Schools

There are six school districts in McDonough County. They include Bushnell Prairie City Community Unit School District 17, Colchester Community Unit School District 180, Industry Community Unit School District 165, Lamoine Vocational System, Northwest Community Unit School District 175, and Macomb Community Unit School District 185. There are five public schools within Macomb Community Unit School District 185. They include Macomb Junior/Senior High (Grades 7 through 12), Edison School (Grades 4 through 6), Lincoln School (Grades K through 3), MacArthur Elementary School and Wilson Elementary School (Grades PK-01). The project corridor lies entirely within the Macomb Community Unit School District 185. (See Exhibit II-1.)

Private schools include: Calvary Baptist Christian Academy, St. Paul's Catholic School, West Central Illinois Special Education Cooperative, and West Central Driving School, Inc. Spoon River College and Western Illinois University are within Macomb (see Exhibit II-1). Spoon River College is a small, private liberal arts institution. Western Illinois University is a state operated institution.

The Macomb Community Unit School District 185 operates a fleet of school buses for their students. There are no fixed school bus routes. Rather, routes are set each year dependent on location of students. School buses currently (1999) use local roads which cross the project corridor.

There are no existing schools within the project corridor. There are no proposed schools within the project corridor or within the City of Macomb.

Worship Centers

Within the City of Macomb and nearby unincorporated areas of McDonough County, there are 29 identified places of worship. In addition, there are 11 worship centers supporting student life at Western Illinois University. There are no existing or proposed churches or worship centers within the project corridor.

Community Facilities

The Lakeview Nature Area at Spring Lake contains the Lakeview Nature Center, which includes interactive exhibits and meeting rooms available for use by the public. Operated by the Macomb Park District, the Center is approximately 600 meters (2,000 feet) from the project corridor. Spring Lake Park features a lake that is over 200 acres with a campground and several picnic

areas. The entrance to the Park abuts the proposed alignment of the bypass in its northwest corner. This lake is also the potable water source for the town of Macomb. There are no other public or private community facilities within or in proximity to the project corridor.

Emergency Services

The entire area of Macomb and areas within the project corridor are serviced by the 911 system. Fire protection for the project corridor is provided by the Macomb Fire Department, the volunteer-supported Colchester Fire District, and the volunteer-supported Emmet Chalmers Fire District. The Macomb Fire Department has a full-time professional staff. The professional staff of McDonough District Hospital provides medical emergency services. The Illinois State Police, the McDonough County Sheriffs Department, the City of Macomb, and the Western Illinois University Office of Public Safety provide police protection.

There are no existing or proposed fire, emergency medical, or police facilities within the project corridor.

Parks and Recreation

The following 12 parks managed by the Macomb Park District serve the residents of Macomb and nearby areas (see Exhibit II-1 for the park locations): Glenwood Park, Everly Park, Chandler Park, Patton Park, Compton Park, Downing Park, Wesley Courts, Derry Park, Gumbart Woods, Spring Lake Park, Lakeview Nature Center and Ball Fore Park. Some of the activities available include boating, camping, hiking, fishing and athletic field sporting events.

Western Illinois University operates a golf course near the intersection of Wigwam Hollow Road and Tower Road. The 18-hole golf course is approximately 300 meters (950 feet) southeast of the project corridor.

Approximately 600 meters (2,000 feet) northwest of the project corridor is Spring Lake. Spring Lake is northwest of the City of Macomb. The area surrounding Spring Lake is heavily wooded. Two city parks are at Spring Lake. Spring Lake is the primary source of water for the City of Macomb. Spring Lake Park and Lakeview Nature Area, adjacent to Spring Lake, are popular recreation areas. The Lakeview Nature Area includes an area of restored and native prairie.

Argyle Lake State Park is immediately north of US 136 at Colchester, Illinois. Argyle Lake State Park is approximately 5.6 kilometers (3.5 miles) west of the terminus of the project corridor at US 136. This is the closest State operated recreation facility to the project corridor.

The project corridor does not contain lands that had Land and Water Conservation Funds involved in their purchase or development. Nor does the project corridor contain lands that involved Open Space Lands Acquisition and Development Act Lands in their purchase or development. No part of the project corridor contains lands that can be characterized as having recreation, wilderness, or open space qualities.

Community Organizations

The City of Macomb provides a variety of community organizations to citizens in and around the project corridor. Organizations include, but are not limited to, the Boy Scouts of America, Girl Scouts/Two Rivers Council, American Legion Post 6, Elks BPOE 1009, Knights of Columbus, Jaycees, Kiwanis, Lion's Club and the VFW. No community organizations operate facilities within the project corridor.

Utilities

The project corridor is provided phone service by GTE except for the western portion of the project corridor, which is serviced by the McDonough Telephone Cooperative. The McDonough Power Cooperative supplies electricity to the western portion of the project corridor. AMEREN CIPS supplies the remainder of the project corridor. AMEREN CIPS also supplies natural gas. Macomb City Waterworks and private wells provide water service. Cable television is supplied by TCI of Illinois and Heartland Cable TV. Internet service is provided by a variety of companies.

The existing utilities within the project area consist of: electric power transmission and distribution lines, both aerial lines and buried cable; long distance and local telephone aerial wires; buried copper and fiber optic cables; aerial and buried cable TV lines; gas lines; and domestic water lines in and around Macomb. No high voltage electrical transmission or petroleum transmission lines cross the project corridor. The project corridor at Spring Lake Road crosses a water main running from Spring Lake to the City of Macomb.

Taxing Districts

The project corridor passes through several taxing districts. These are:

- Macomb Township
- Emmet Township
- Chalmers Township
- Scotland Township
- Macomb Municipal Airport
- Macomb Community Unit School District 185
- Spoon River College
- Good Hope-Sciota Fire Protection
- Emmet-Chalmers Fire Protection
- McDonough County Tax
- City-County Building Commission

II.A.5 Highway and Other Transportation Data

Chapter I, “Purpose and Need,” described the highway system in west central Illinois and its importance to the City of Macomb. Planned improvements to the regional highway system were also described. This section focuses on the local transportation system. Several arterial and collector streets serve the City of Macomb. US 67 and US 136 intersect in the center of Macomb and function as major arterials. Complicating the road system within the City is the BNSF railroad that runs diagonally through the center of Macomb. Heavy truck traffic and congestion is a problem in the center of Macomb at the crossroads of these major highways. The City of Macomb has no public transit. A public and a private airport serve Macomb.

Highways

Several arterial and collector streets serve the City of Macomb. (See Exhibit II-1.) Moving from north to south, primary east-west arterials and collectors include University Drive, at the far north, Adams Street, Jackson Street (US 136/US 67), and Grant Street. These are all two lane streets. Moving from east to west, primary north-south arterials and collectors are Candy Lane, Johnson Street, LaFayette Street (US 67), Ward Street, Collins Avenue, and Wigwam Hollow Road. The majority of these streets are two-lane roads.

Through town, US 136 is named Jackson Street and US 67 is named Lafayette Street. Both function as major arterials. These highways originally intersected at the McDonough County courthouse square. Currently, US 67 and US 136 are routed around the courthouse square and central business district. Lafayette Street and Jackson Street continue through to the courthouse square. Sections of US 67 and US 136 are five lanes through the main part of town.

Complicating the road system within the City is the BNSF railroad that runs diagonally through the center of Macomb. The tracks run from northeast to southwest. All street and railroad crossings within the City are at-grade. Because of the railroad tracks, there are few continuous through streets in the City of Macomb. The few at-grade crossings are a source of congestion.

The convergence of major US highways near the city center frequently results in congestion on the highway system. This is compounded by the fact that these roads link Macomb to other major communities in the region, and heavy truck traffic travels between those cities and to and from the industrial area of Macomb along the BNSF railroad tracks. Eleven percent of the daily traffic using US 67/US 136 through Macomb is truck traffic. The presence of Western Illinois University, in proximity to US 136, US 67, and the urban core, is a contributing factor to peak hour and non-peak hour congestion.

The following rural two-lane roads cross the preferred alternative: Adams Street (1250N), CH 14/1350N, 950E, Springlake Road, Bower Road (1400E), 1400N, and 1300N. Major roads crossing the project corridor are US 136 at its western end, US 67 on the north, and US 136/US 67 at its eastern end. (See Exhibit II-1.)

Transit and Rail

There is no public transit provided by the City of Macomb, and no public transit providers serve McDonough County or any part of the project corridor. Currently, Western Illinois University operates a campus shuttle system, known as GOWEST. The system primarily serves the University's needs but does provide service within the City of Macomb.

The BNSF railroad serves the City of Macomb and McDonough County. This is a heavily used freight corridor. Ten trains pass through town between the hours of 5:30 a.m. and 5:30 p.m. AMTRAK stops in Macomb and provides one train daily in each direction between Quincy, Illinois and Chicago. Macomb is the last stop on the route before Quincy.

The BNSF railroad tracks intersect the project corridor northeast of Macomb. The tracks parallel US 136 southwest of Macomb, and are within 400 meters (1,300 feet) of the southwestern terminus of the project corridor.

Bicycle

There are no designated multi-use or bicycle trails within the City of Macomb, McDonough County, or the project corridor. Western Illinois University has several shared pedestrian/bicycle paths on campus.

Airports

The Macomb Municipal Airport provides air transport (see Exhibit II-1). Established in 1969, the Airport is home base to approximately 30 aircraft. Macomb Municipal Airport has an east/west paved runway that is 1,550 meters (5,100 feet) long by 22 meters (75 feet) wide. A second unpaved north/south runway is 1,240 meters (4,070 feet) long by 45 meters (145 feet) wide. The north/south runway is grass surface. Macomb Municipal Airport is a general aviation airport, and

is capable of handling small turboprop aircraft. The airport is 1,800 meters (5,905 feet) north of the project corridor, east of US 67.

The Five-Year Airport Layout Plan (ALP) for the Macomb Municipal Airport calls for the paving of the north/south runway. The ALP calls for the expansion of this runway to allow it to handle larger turbo-prop aircraft. Ultimately, the airport will expand the north/south runway to approximately 1,525 meters (5,000 feet). The majority of any expansion of the north/south runway would be in a southern direction, as rugged terrain to the north limits the amount of expansion that could occur in that direction. Neither the extension nor its Federal Aviation Administration (FAA) clearance zone is within the project corridor. The primary runway will remain the east/west runway. The airport updates the ALP annually.

A second airport, Smith Airfield (see Exhibit II-1), is at the intersection of US 136 and US 67 east of Macomb. This airfield is the former Macomb Clugston Airport, acquired by Henry Smith of Macomb in 1984. Smith Airfield is privately owned, operated, and maintained. Smith Airfield consists of an east/west grass surface runway. The runway is approximately 750 meters (2,500 feet) long by approximately 50 meters (165 feet) wide. Other facilities consist of two small hangers. There are no plans to expand Smith Airfield. The Smith Airfield and its FAA clearance zone lies within the project corridor.

II.A.6 Local Planning

The City of Macomb has a Mayor-City Administrator government system, with aldermen elected from seven City wards. A county clerk, directed by a county board) administers McDonough County. The City of Macomb has a land use plan and zoning. McDonough County has neither. Both bodies are taking actions to foster economic development.

Land Use Planning

The Office of Building and Zoning is charged with providing land use planning functions for the City of Macomb. The Community Development Coordinator in the Office of Building and Zoning controls land use decisions, as directed by the City Administrator and Mayor, and approved by the Board of Aldermen. The Community Development Director is charged with planning functions for the City. A Zoning Officer reviews development proposals, and enforces subdivision regulations, zoning compliance, and land use decisions of the Board of Alderman. The Building and Plumbing Inspector reviews building and development proposals and is also instrumental in land use planning decisions for the City.

McDonough County does not have a designated planning department. An appointed commission, reporting to the County Board, makes land use decisions. The County Superintendent of Highways reviews development proposals. The County Board approves them.

The most recent planning document for the City of Macomb is the Macomb, Illinois Comprehensive Plan, 1989. The City has not updated the comprehensive plan. The McDonough County Overall Economic Development Program, 1984, is the closest document to a comprehensive plan for the County. Both the Comprehensive Plan and the Overall Economic Development Program identify the completion of the highway system network as essential to the economic growth of Macomb, McDonough County and the surrounding region. In particular, the Comprehensive Plan identifies the goal of providing an adequate and safe automobile, pedestrian, bicycle, truck, rail, and air transportation system that is designed to support the overall physical, social, and economic goals and objectives of the community.

Both the City of Macomb and McDonough County benefit from the presence of the Illinois Institute for Rural Affairs at Western Illinois University. The Institute provides demographic and

economic analysis and planning assistance to local governments. The *Strategic Visioning and Planning Project* is the published proceedings of a conference conducted by the Illinois Institute for Rural Affairs in 1998. The purpose of the conference was to gather municipal, county, and state officials, along with community leaders and major enterprises, and chart a plan of action for the City of Macomb's and McDonough County's growth. While discussing physical growth, this conference focused primarily on economic development. One conclusion of the conference was that completion of the highway system providing freeway access to and from Macomb and other cities in west-central Illinois would promote economic development within the region.

Existing Zoning

The majority of the project corridor passes through the agricultural zoning district around Macomb. The portions of the corridor to the west and northeast of Macomb pass through unincorporated areas of the county, beyond the city's extra territorial jurisdiction. The eastern portion of the project will be adjacent to an Enterprise Zone that is zoned for manufacturing. The area around the Macomb Municipal Airport is not designated a particular zone by the County or City, but does have restrictive use areas in accordance with the FAA's guidelines.

There are no present plans to zone the unincorporated areas of McDonough County.

Development Goals

McDonough County and the City of Macomb have taken several measures to foster economic development within the City and County. The Macomb Industrial Development Corporation and the Macomb Downtown Development Corporation are charged with encouraging economic growth in the industrial and downtown areas of Macomb. The City has also established a Tax Increment Financing District in the downtown area, immediately surrounding the McDonough County Courthouse. McDonough County and the City of Macomb have jointly created and won federal designation of an enterprise zone to encourage development within the City. A more detailed discussion of these initiatives may be found in Section II.A.2, "Economic."

Development goals for the City of Macomb are linked in part to the growth of Western Illinois University. Western Illinois University does not currently have a Strategic Facilities Master Plan. Instead, the University relies on a Five-Year Facilities Plan to program for the physical growth of University facilities. The Five-Year Facilities Plan is updated annually. This document calls for steady growth in enrollment for the University. Facility expansion will be tied to any increases in student enrollment. Currently, the University's focus is on maintaining and improving its physical ties to the surrounding neighborhoods immediately to the south and east of the campus. No major new facilities are planned through the year 2004. If new facilities are programmed, they will be developed as in-fill projects if possible. General growth of the campus, if it were to expand, would be to the north and east. The University has no structures within the project corridor, nor has the University identified plans to construct any facilities within the project corridor. The University owns a farm that lies partly within the project corridor.

Recent Developments

Physical growth of the City of Macomb and the immediate surrounding area has occurred primarily along the major highways serving the town, and in areas around Western Illinois University. Residential development is occurring as in-fill in the areas between major highways. Because the population of the City and County has leveled off or experienced a slight decline through the 1990s, there is not a large demand for new housing. Recent residential developments have focused on large lot, upper price range homes. Major retail developments have occurred along the major highways. As mentioned in Section II.A.2, recent commercial developments include the establishment of a Wal-Mart Supercenter and a Big K-Mart, both on

the east side of the City on East Jackson Street (US 136/US 67). The thrust of recent commercial development has been along this corridor.

The NTN-Bower Corporation facility along Bower Road was expanded in 1999. An expansion of the remaining existing industrial area is also proposed along Bower Road, approximately 1,600 meters (5,250 feet) west of the eastern segment of the project corridor.

II.B AGRICULTURAL

This section describes the following agricultural lands characteristics: Agricultural Use, Agricultural Soils, Land Capability Groupings, and Agricultural Zoning. Coordination efforts with state agricultural agencies also are described.

II.B.1 Agricultural Use

The primary land use in McDonough County is agricultural. More than 90 percent of the total land area of this County, or 137,680 hectares (340,035 acres), is in farm or farm-related usage (see Table II-4). Exhibit II-2a through Exhibit II-2q show the extent of agricultural lands in pasture and row crop uses in the project area. In 1997, there were 824 farms in McDonough County. The average farm size was 167 hectares (412 acres), which exceeds the 1997 statewide average of 150 hectares (370 acres). More than 58 percent of the farm units in this county list farming as their principal occupation. According to the 1997 Census of Agriculture, the average land value in this County is approximately $4,638 per hectare ($1,878 per acre). This is less than the statewide average of $5,251 per hectare ($2,127 per acre).

Table II-4. Land in Farms and Cash Receipts, McDonough County (1997)

	Illinois	McDonough County
Total Land Area	14,400,810 hectares (35,557,556 acres)	152,106 hectares (375,663 acres)
Land in Farms	11,014,081 hectares (27,201,978 acres)	137,695 hectares (340,071 acres)
Percent Land Area Farmed	76.5%	90.2%
Average Farm Size	150 hectares (370 acres)	167 hectares (412 acres)
Number of Farms	73,051	824
Average Value of Farm	$5,251 per hectare ($2,127 per acre)	$4,638 per hectare ($1,878 per acre)

Source: 1997 Census of Agriculture (US Bureau of Census, 1997)

The principal grain crops in McDonough County are corn and soybeans (see Table II-5). In 1997, about 54,497 hectares (134,560 acres) of land were planted in corn, and 52,120 hectares (128,691 acres) in soybeans. These two products represent nearly 90 percent of the total hectares of farmland planted in row crops.

Table II-5. Agricultural Statistics, McDonough County (1997)

	Illinois	McDonough County
Corn	4,384,286 hectares (10,828,071 acres)	54,497 hectares (134,594 acres)
Soybeans	3,977,925 hectares (9,824,463 acres)	52,120 hectares (128,723 acres)
Wheat for Grain	398,201 hectares (983,455 acres)	897 hectares (2,215 acres)
Hay	332,999 hectares (822,423 acres)	3,705 hectares (9,150 acres)
Other[1]	682,458 hectares (1,685,498 acres)	7,413 hectares (18,308 acres)
Total Land in Crops	9,775,869 hectares (24,143,910 acres)	118,632 hectares (292,991 acres)
Poultry (no. of animals)	1,437,697	19,581
Beef Cows (no. of animals)	453,127	8,359
Milk Cows (no. of animals)	127,702	274
Hogs (no. of animals)	4,679,166	33,390
Sheep (no. of animals)	72,544	1,520
Total Value of Products Sold	$8,556,486,000	$96,818,000
Average Value of Products Sold/Farm	$117,130	$117,497

[1]Other includes crops produced on less than 405 hectares (1,000 acres), such as sorghum and oats. Source: 1997 Census of Agriculture (US Bureau of Census, 1997)

In addition to crop production, livestock raised in McDonough County totaled 43,543 cattle, hogs, and sheep, and 19,581 poultry (see Table II-5). The total value of row crops and livestock sold in this county in 1997 was about $96,818,000 or an average of $117,497 per farm.

II.B.2 Agricultural Soils

Prime Farmland

The US Department of Agriculture/Farm Service Agency (USDA/FSA) defines Prime Farmland as the land with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. The land does not need to be cleared or active, but cannot be urbanized, paved, or covered with water. The land must have the soil quality, growing season, and moisture supply needed to produce economically sustained high yields when treated

and managed according to acceptable farming methods. According to the USDA/FSA, there are approximately 110,016 hectares (271,711 acres) of Prime Farmland in McDonough County. This represents approximately 72 percent of the total land area in this county.

Important Farmland

Important farmland is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops. Farmlands of statewide importance include those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. These lands are designated Statewide Important Farmland soils by the local Soil and Water Conservation District, the Cooperative Extension Services, the University of Illinois Agronomy Department and other applicable agencies. There are approximately 23,252 hectares (57,427 acres) of mapped Statewide Important Farmland in McDonough County.

II.B.3 Land Capability Groupings

The soil capability grouping adopted by the US Department of Agriculture (USDA) shows the suitability of soils for most kind of field crops. According to the USDA, soils are grouped according to their limitations when used for field crops, the risk of damage when they are used, and the way they respond to treatment. Eight capability classes are used to describe the general suitability of soils for most kinds of field crops. These capability classes are listed below:

Class I soils have few limitations or hazards that restrict their use.

Class II soils have moderate limitations or hazards that reduce the choice of plants or require moderate conservation practices.

Class III soils have severe limitations or hazards that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations or hazards that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations or hazards that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations or hazards that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations or hazards that nearly preclude their use for commercial crop production.

Soils in the project corridor vary from Class I to Class VII (see Table II-6). Normally, prime and statewide important soils are classified in one of the first three categories.

II.B.4 Agricultural Zoning

Zoning requirements and designations within the project corridor were examined to determine the status of currently active agricultural lands. If active agricultural lands are designated by land use plans and zoning for future non-agricultural use, they would be taken out of production

Table II-6. Land Capability Groupings in the County

Soil Classification	Hectares	Acres
Class I	44,064	108,827
Class II	63,930	157,891
Class III	28,548	70,506
Class IV	2,845	7,026
Class V	724	1,788
Class VI	8,171	20,180
Class VII	3,824	9,444
Class VIII	0	0
TOTAL	152,106	375,662

regardless of the proposed project. According to McDonough County staff, properties in the project corridor are zoned agricultural. However, agricultural preservation zoning does not exist to protect these lands from conversion to non-agricultural land uses. Also, there are no agricultural protection districts in McDonough County.

II.B.5 Agricultural Conservation and Protection Areas

The Agricultural Areas Conservation and Protection Act of 1979 provided for the establishment of Agricultural Conservation and Protection Areas (Ag Areas) to preserve agricultural land for the production of food and other agricultural products and to conserve and protect agricultural land as valued natural and ecological resources. Landowners may request their county boards to designate their farmland as Ag Areas. Ag Areas must contain a minimum of 350 acres and are established for a period of 10 years, and can be renewed. Land in Ag Areas can only be used for agricultural purposes. There are no Ag Areas in the project corridor.

II.B.6 Conservation Reserve Program

The Conservation Reserve Program encourages farmers to voluntarily plant permanent areas of grass and trees on land that needs protection from erosion, to act as windbreaks, or in places where vegetation can improve water quality or provide food and habitat for wildlife. In return, they receive annual rental payments, incentive payments for certain activities and cost-share assistance to establish the protective vegetation.

A total of 27.9 hectares (68.9 acres) of land on six properties within the project corridor are part of the Conservation Reserve Program.

II.B.7 Centennial Farms

To qualify for Centennial Farm status, an agricultural property must have been owned by the same family of lineal or collateral descendants for at least 100 years. There are four centennial farms within the project corridor. Exhibit II-3j through Exhibit II-3l, Exhibit II-3n, and Exhibit II-3q show their locations.

II.B.8 Coordination

The Illinois Department of Transportation (IDOT) met with Illinois Department of Agriculture (IDOA) representatives on three occasions during the alternative evaluation process that led to the identification of the proposed alignment, August 22, 1995, October 30, 1997, and April 19, 1999. Representatives of the Farm Bureau attended the 1999 meeting. The minutes of those meetings are contained in Appendix A.

II.C CULTURAL

II.C.1 Historic Resources

Buildings along the proposed project were photographed and evaluated for a preliminary determination of historical status. A review of published historic site files and maps was conducted. Based on their architectural style, three homes within the project area were identified as potentially eligible for inclusion in the National Register of Historic Places (NRHP). Exhibit II-3j and Exhibit II-3q show their locations. There are no historic bridges or districts in the project area. The proposed project would have no effect, direct or indirect, on historic resources listed on or eligible for inclusion in the NRHP.

II.C.2 Archaeological Resources

Archaeological surveys within the project area identified 60 sites and 25 find spots or isolates. These sites minimally reflect a temporal range spanning the Early Holocene through the recent Euro-American presence. However, relatively few diagnostic artifacts have been recovered. The preponderance of evidence suggests that Early Archaic, late Middle Archaic (Helton-age), and later Late Woodland remains dominate the prehistoric cultural inventory. Historic period sites are few in number but appear to be dominated by the remains of late nineteenth to early twentieth century farmsteads and dumps from local potteries.

II.D AIR QUALITY

The National Ambient Air Quality Standards (NAAQS), established by the US Environmental Protection Agency, set maximum allowable concentration limits for six criteria air pollutants. Areas in which air pollution levels persistently exceed the NAAQS may be designated as “non-attainment.” States in which a non-attainment area is located must develop and implement a State Implementation Plan (SIP) containing policies and regulations that will bring about attainment of the NAAQS.

All areas of Illinois currently are in attainment of the standards for four of the six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Chicago is classified as non-attainment for the one-hour ozone standard. In addition, Cook, DuPage, Kane, Lake, McHenry, and Will Counties and Aux Sable and Goose Lake Townships in Grundy County and

Oswego Township in Kendall County have been classified as a severe ozone non-attainment area. Lake Calumet and McCook in Cook County have been designated as non-attainment for the particulate matter (PM_{10}) standard. The sources of particulate matter that prompted the non-attainment classification are unrelated to transportation. All other areas of Illinois currently are in attainment for the ozone and PM_{10} standards.

No portion of this project is within a designated non-attainment area.

II.E NATURAL RESOURCES

The majority of the project area is in flat to gently rolling agricultural land planted in row crops and pasture. An existing system of primary and secondary roads, scattered farmsteads, and rural residential development dissects this rural landscape. Extensive corridors of upland and bottomland forest follow the East Fork of the La Moine River. Deeply incised drainage channels form a network of wooded ravines draining toward the river system. Localized areas of wetlands, ponds, early successional forest, and hill prairie are found throughout the corridor.

This section discusses the following natural resource characteristics: Wildlife Resources, Geology and Soils, Hydrology, Plant Communities, Threatened and Endangered Species, and Nature Preserves and Natural Areas. Natural resource-related descriptions are contained in the following later sections: Water Resources, Flood Plains, and Wetlands.

II.E.1 Wildlife Resources

Habitats

Approximately 63 percent of the project area is in cropland (see Table II-7 in Section II.E.4 and Exhibit II-2), planted with cultivated species such as corn, soybeans or small grains. An additional nine percent of the corridor has been developed and offers disturbed habitats typically associated with rural residences, farmsteads, commercial and industrial buildings. Grassland habitats, including hayfields, pasture, forbland and non-native grasses, occupy approximately seven percent of the project area. Dense stands of upland and mesic bottomland forest area are associated with the East Fork of the La Moine River, and follow many deeply incised drainage channels tributary to the East Fork. This habitat accounts for nearly 18 percent of the cover in the corridor. The remaining wildlife habitats are scattered and diverse, comprised of wet floodplain forest found on narrow terraces associated with perennial waterways, depressional wetlands in pockets throughout the corridor, remnants of native prairie, and wooded fencerows often marking the boundaries separating tracts of agricultural land. Aquatic fauna are associated with several small ponds, minor tributaries and the East Fork of the La Moine River.

Populations

Mammals

The project area lies within the current range of 44 to 45 native species of mammals (Jones and Birney, 1988). Table B-1 in Appendix B lists 36 species known or likely to occur in the project corridor based on field studies (Hoffman and Amundsen, 1998).

The upland forest cover type is on steep slopes, knolls, and ridgelines, especially in the northwestern and northeastern portions of the corridor. The white footed mouse (*Peromyscus leucopus*), eastern chipmunk (*Tamias striatus*), short-tailed shrew (*Blarina brevicauda*), and mink (*Mustela vison*)) are common in this habitat. A variety of other small mammals such as the fox squirrel (*Sciurus niger*), long-tailed weasel (*Mustela frenata*), woodchuck (*Marmota monax*) and opossum (*Didelphis marsupialis*) rely on these habitats. The dense woods, heavy brush and

steep terrain provide ideal cover and travel corridors for species such as raccoon (*Procyon lotor*). White-tailed deer (*Odocoileus virginianus*) are abundant in the thick woods, especially in areas where grassy openings and irregular forest edge prevail. Given the open and extensive agricultural nature of the project corridor, the wooded areas along the drainage ways and steep uplands provide cover for deer and other species.

Short-tailed shrew, raccoon (*Procyon lotor*), and beaver (*Castor canadensis*) are common in the bottomland forest habitat. Mist netting carried out at two sites along the East Fork of the La Moine River identified four species of bats: eastern pipistrelle (*Pipistrellus subflavus*), big brown bat (*Eptesicus fuscus*), red bat (*Lasiurus borealis*) and an unidentified *Myotis* sp.

Grassland cover types such as prairie, hayfields, pasture and recently abandoned early successional fields provide habitat for small mammals including eastern cottontail (*Sylvilagus floridanus*), short-tailed shrew and least shrew (*Cryptotis parva*). Live trap studies in a hayfield east of the project corridor found the prairie vole (*Microtus ochrogaster*), the southern bog lemming (*Synaptomys cooperi*) the short-tailed shrew and the common house mouse (*Mus musculus*). Local sources indicate that the coyote (*Canis latrans*) population is high and that numerous red fox (*Vulpes fulva*) also inhabit the area.

Fencerow habitat consists of shrubs and early successional trees following fence lines and farm fields. Small mammals such as red fox, woodchuck, and opossum utilize this habitat for cover and travelways.

Landscape/developed cover types offer habitat for many common species including raccoon (*Procyon lotor*), skunk (*Mephitis mephitis*), opossum (*Didelphis marsupialis*), and woodchuck (*Marmota monax*). The big brown bat (*Eptesicus fuscus*) can be found in old buildings and barns.

Amphibians and Reptiles

Table B-2 in Appendix B lists those amphibian and reptile species known or likely to occur in the project area (Phillips and Petzing, 1997). A total of seven amphibian species and three reptile species were observed in the project area. A site (Exhibit II-2k) along the East Fork of the LaMoine River containing floodplain forest, old field, marsh, river oxbow, and river contained a high number of herptile species (smallmouth salamander, American toad, cricket frog, western chorus frog, bullfrog, southern leopard frog and brown snake).

Species such as the common garter snake (*Thamnophis sirtalis*) and the brown snake (*Storeria dekayii*) may be found in upland forest or forest edge. Bottomland forest offers seasonal habitat for the western chorus frog (*Pseudacris triseriata*) and the smallmouth salamander (*Ambystoma texanum*).

Many species such as the American toad (*Bufo americanus*), the bull frog (*Rana catesbeiana*), the southern leopard frog (*Rana sphenocephala*) and the mudpuppy (*Necturus maculosus*) live and breed in the open water areas of palustrine wetlands, small ponds and the backwater areas of the La Moine River system.

Grassland habitats offer potential breeding areas for the midland brown snake (*Storeria dekayi*).

Birds

Bird censuses were conducted within the project corridor in 1997 and 1998 during the fall, winter, spring, and breeding season. During this time, 59 separate species were identified

(Amundsen and Enstrom, 1998a, b). Thirty-three of these species were noted during breeding season. Table B-3 in Appendix B lists those species observed in the project corridor.

Upland forests provide habitat for black-capped chickadee (*Parus atricapillus*), white breasted nuthatch (*Sitta carolinensis*), indigo bunting (*Passerina cyanea*), and gray cat bird (*Dumella carolinensis*). Sightings were made of red-tailed hawks (*Buteo jamaicensis*). Upland forest areas are also utilized by a variety of woodpeckers including the red-bellied woodpecker (*Melanerpes carolinus*) and red-headed woodpecker (*Erythrocephalus*).

Bottomland areas along the stream corridor offer avian habitat typical of central and western Illinois. Species such as eastern phoebe (*Sayorins phoebe*), eastern wood peewee (*Contopus virens*) and brown creeper (*Certhia familiaris*) are typical. A full array of woodpeckers including red-bellied, red-headed, hairy and downy woodpeckers utilize bottomland habitat. Species such as the yellow breasted chat (*Icteria virens*) and American redstart (*Setophaga ruticilla*) inhabit bottomland edge.

Grassland areas, such as pasture and early successional abandoned fields, are found interspersed throughout the corridor. These areas provide habitat for species such as the common yellow throat (*Geothlypis trichas*), dickcissel (*Spiza americana*), eastern meadow lark (*Sturnella magna*), field sparrow (*Spizella pusilla*) and northern bobwhite (*Colinus virginiaus*). Bells Vireo, an Illinois watch species, was identified in the project area during the 1997 breeding season. This species breeds in successional fields, riparian areas and in shrubby vegetation.

Fence rows provide feeding, nesting, and resting habitat for birds such as the northern oriole (*Icterus galbula*), house wren (*Troglodytes aedon*), song sparrow (*Melospiza melodia*), goldfinches (*Carduelis tristis*), and mourning dove (*Zenaida macroura*).

Landscaped/developed areas offer avian habitat for species adapted to disturbed cover. Common species in developed areas include morning dove (*Zenaida macroura*), song sparrow (*Melospiza melodia*), black capped chickadee (*Parus atricapillus*), and goldfinch (*Carduelis tristis*).

Some of the greatest declines in bird populations within Illinois over the past few decades concern neo-tropical migrants. These are species of birds that breed in the United States and winter in Latin America. These species require large tracts (area sensitive) of forested areas for nesting. Patchy forested areas, like those that occur in the project area, open these species to nest predation (raccoons, foxes) and parasitism (brown-headed cowbirds).

Though the project corridor is highly fragmented, the forested areas do contain a few of these area sensitive species. The breeding bird survey identified four species of neotropical migrants (the highly sensitive least flycatcher and the medium sensitive hairy woodpecker, red-eyed vireo, and wood thrush) in the project corridor.

II.E.2 Geology and Soils

Physiography and Topography

The project area lies within the Galesburg Plain of the Till Plaines Section of the Central Lowland Physiographic Province. Broad till plain characterizes the Galesburg Plain with alluviated major river valleys with steep slopes and numerous minor deep valleys. The till plain is generally flat within the corridor except near river and creek valleys. River valleys show eroded, steep slopes, and almost flat flood plains. The flood plains are highest east of Macomb. The bedrock units are not generally exposed in the area.

Bedrock Geology

The project area crosses bedrock of both Mississippian and Pennsylvanian age. Mississippian-age rocks underlie the eastern end of the project from the intersection with US 67/136 to the University Drive area. These rocks consist of Upper Valmeyeran limestones and shales, including fine-grained limestone 8 meters (25 feet) or less in thickness. Above the Mississippian rocks are sequences of Pennsylvanian-age rocks that underlie most of the project area. These uppermost rocks consist mainly of sandstone and shale, although local seams of coal can be found. In the northwest portion of the project area the proposed alignment would cross a tract where the uppermost bedrock is the Pennsylvanian-age Carbondale Formation.

Surficial Geology

Unlithified glacial deposits in the project area range in thickness from less than 8 meters (25 feet) in the northern portion just west of the proposed interchange with US 67 to 30 to 61 meters (100 to 200 feet), along the western leg of the project north of US 136, and at the eastern end of the project at the proposed interchange with US 136 and US 67. The uppermost unlithified unit is the Peoria Silt, which reaches thicknesses of 1.8 to 2.4 meters (6 to 8 feet). Beneath this unit along the alignment of US 136 are tills forming the Glasford and Wolf Creek formations. The Glasford Formation consists of glacial till with interbedded outwash deposits of silt, sand and gravel and is less than 6 meters (20 feet) thick. Beneath the Glasford formation are thick deposits of till forming the Wolf Creek Formation. In the northern and northwestern portions of the project area, the Wolf Creek formation is thin or absent. At the northeastern corner of the project, thin Teneriffe Silt lies between the Peoria Silt and the Glasford Formation. The Teneriffe Silt consists of fine to coarse-grained silt, locally containing some sand and clay. In the eastern extent of the project area, extending north from the intersection of US 67 and US 136, sand more than 6 meters (20 feet) thick within the formation lies within 15 meters (50 feet) of the ground surface. Along the East Fork of the La Moine River, unlithified glacial sediments have been eroded by the river, and the Cahokia Formation, consisting of silt, sand and gravel deposited by the river, lies directly on Pennsylvanian bedrock.

Soils

Within the western portion of the project corridor, the flat to gently rolling agricultural lands are predominantly on Rozetta, Kenomah and Tama silt loams, moderately well drained to somewhat poorly drained upland soils with moderate erosion potential. Well-drained Hickory silt loams are found on steep slopes and ridges associated with drainage tributaries. These soils are highly erodible. Wakeland silt loam occurs along the flood plain of the East Fork of the La Moine River. This soil series is somewhat poorly drained and exhibits minimal erosion potential.

The northern portion of the project corridor crosses extensive agricultural land with Ipava, Kenomah, and Tama silt loams, as well as Sable silty clay loams, actively farmed. These soils range from moderately well to poorly drained, with slight to moderate erosion potential. In the northeastern corner of the corridor, steeper slopes of Elco silt loam, Hickory silt loam, and Rozetta silt loam follow surface water tributaries and have severe erosion potential.

South of the East Fork of the La Moine River on the east side of the project corridor flat, open agricultural lands prevail. These areas are predominately on Ipava and Sable silt loams with moderate erosion potential.

Economic Geology

Primary geoeconomic commodities in McDonough County include coal, oil and gas, limestone/dolomite and sand/gravel. No limestone quarries are in the project area. One sand mining operation in the study corridor, approximately 600 meters (1,968 feet) south of

CH14/1350N, was recently closed and the property sold for private development. No oil or natural gas production facilities lie in the project corridor. A natural gas pipeline, however, crosses the corridor at three locations: 1) on the west end of the project area, immediately south of US 136; 2) northwest of Macomb at design station 106+700; and 3) along the west edge of US 67, north of Spring Lake Road.

The Illinois Coal Mines Maps of McDonough County indicate that no coal mining has taken place in the project area. Although no records show coal mines in the area, farmers and other landowners could have operated small mines to obtain coal for personal use. These mines, however, are usually small pits and should not pose a risk to the proposed project.

II.E.3 Hydrology

The existing drainage area is predominately agricultural characterized by rolling hills and moderately steep valleys. The entire corridor lies in the La Moine River basin. The La Moine River is a tributary of the Illinois River. Drainage systems in the corridor consist of culverts, bridges, and ditches. Property owners have dammed some streams and drainageways to provide water for livestock. (See Section II.F.1, "Surface Water.")

Flooding of low-lying areas near the La Moine River has historically occurred during major storm events. (See Section II.G, "Flood Plains.")

II.E.4 Plant Communities

Plant communities within the 600-meter (2,000-foot) project corridor were mapped and characterized using aerial photo interpretation and limited field surveys (see Exhibit II-2a through Exhibit II-2q). A discussion of the most important upland plant communities follows. Table II-7 summarizes the magnitude of each cover type. Botanical surveys were performed in areas that appeared to have some remaining natural character (Hill, 1998 and 1999). The quality of each site was determined by using the Natural Area Inventory grading system (Taft et al., 1997). The grading system ranges from 'A' (relatively stable or undisturbed communities) to 'E' (very early successional or very severely disturbed communities). The "+" qualifier indicates past disturbance, but the community is recovering or has natural character. The "–" qualifier indicates that a recognizable natural community was present, but disturbance continues and recovery may not occur. Within the project corridor, communities range from Grade C (mid-successional or moderately to heavily disturbed communities) to Grade E. Those communities considered Grade C are depicted on Exhibit II-3.

Plant Community Descriptions

Upland Forest

Forestland formerly represented 35 to 45 percent of McDonough County; but only 10.4 percent remained in 1996, with the majority occurring along the La Moine River Valley (Illinois Department of Natural Resources, 1996). Dry-mesic and mesic upland forests in the project corridor occur on elevated land and ravine slopes and represent 12.8 percent of the corridor. These areas are typical of upland forests throughout the county and have been disturbed through activities such as grazing and woodcutting (Hill, 1999). Canopy trees include bur oak (*Quercus macrocarpa*), white oak (*Quercus alba*), bitternut hickory (*Carya cordiformis*), shagbark hickory (*Carya ovata*), shingle oak (*Quercus imbricaria*), and northern red oak (*Quercus rubra*). Understory species include blackberry (*Rubus allegheniensis*), multiflora rose (*Rosa multiflora*), honeysuckle (*Lonicera* spp.), barberry (*Berberis thungergii*), autumn olive (*Shepherdia umbellata*), and Missouri gooseberry (*Ribes missouriensis*).

Table II-7. Vegetation Cover Types within the Project Corridor

Cover Type	Hectares	Acres	Percent of Project Corridor	Cover Type Percent of Total Land Within McDonough County*	Corridor Cover Type Area as Percent of Total Cover Type Within McDonough County**
Agricultural Land	1,027.1	2,536.7	63.29%	71.4%	1%
Upland Forest	207.8	513.2	12.80%	10.4%	2%
Developed Land	138.8	342.8	8.55%	1.5%	5%
Mesic Floodplain Forest	81.4	201.0	5.02%	--	1%
Pasture	70.1	173.1	4.32%	--	<1%
Non-native Grassland	44.7	110.4	2.75%	14.3%	4%
Hayfields	13.0	32.1	0.80%		<1%
Wet Meadow	6.3	15.6	0.39%	0.5%	1%
Ponds	7.1	17.5	0.44%	0.2%	3%
Wet Floodplain Forest	4.0	9.9	0.25%	0.9%	<1%
Shrubland	3.8	9.4	0.23%	--	<1%
Sedge Meadow	3.0	7.4	0.19%	--	<1%
Prairie	2.8	6.9	0.17%	--	<1%
Fence Row	2.3	5.7	0.14%	--	<1%
Forbland	1.9	4.7	0.12%	--	<1%
Barren Lands	1.9	4.7	0.12%	< 0.1%	13%
Marsh	1.0	2.5	0.06%	< 0.1%	<1%
Seeps	0.8	2.0	0.05%	-	<1%
Streams	0.4	1.0	0.03%	0.6%	<1%
Wet Shrubland	0.1	0.2	0.01%	--	<1%
Lake	4.6	11.4	0.28%	0.1%	
TOTAL	1,622.9	4,008.2	100%	100%	

* Source: Illinois Land Cover, 1996

**Of the total amount of each cover type in McDonough County, this represents the percentage within the project corridor.

Two sites were identified as being representative of the project corridor. Botanical Site 2A (Exhibit II-3b) is classified as a mesic upland forest community and occurs on the north bank of the East Fork of the La Moine River. The site is on an approximately 15.2-meter-tall (50.0-foot) bluff above the river. The site has a natural area grade of C. The site is dominated by red and white oak. Other species include American hazelnut (*Corylus Americana*), hop hornbeam (*Ostrya virginiana*), shingle oak, and Virginia creeper (*parthenocissus quinquefolia*). Botanical Site 4A (Exhibit II-3d) is classified as a dry-mesic upland forest and occurs on a steep west-facing bluff just east of Spring Creek. The site has a natural area rating of C-. The site is dominated by white oak and American elm (*Ulmus Americana*). This site has a diverse understory with few signs of grazing. The site appears to be a former savanna-barrens site and still has remnants of that flora. Herbaceous species include Pennsylvania sedge (*Carex pensylvanica*), pale beardstongue (*Penstemon palidus*), and pale indian plantain (*Cacalia atriplicifolia*).

Mesic Floodplain Forest

Mesic floodplain forests are where flooding occurs with lesser frequency and for shorter durations than in areas of wet floodplain forests described subsequently. Well-drained riparian communities (e.g., occurring on natural levees) and some flatwoods communities on the upper terraces by streams are part of this cover type. These areas lack the criteria (hydric soils, wetland hydrology) to be jurisdictional wetlands. Mesic floodplain forests are less extensive than the upland forest, representing 5.02 percent of the project corridor. Dominant trees include sugar maple (*Acer saccharum*), green ash (*Fraxinus pennsylvanica*), black walnut (*Juglans nigra*), black cherry (*Prunus serotina*), basswood (*Tilia americana*), northern red oak, slippery elm (*Ulmus rubra*), and American elm (*Ulmus americana*). Understory plants include hawthorn (*Crataegus* spp.), multiflora rose, honeysuckles, blackberry, white avens (*Geum canadensis*), honewort (*Cryptotaenia canadensis*), English bluegrass (*Festuca pratensis*), and pasture bluegrasses (*Poa* spp.). Most of these areas are degraded by active grazing (Hill, 1999).

One site was identified as being representative of the project corridor. Botanical Site 1 (Exhibit II-3k) occurs on the south side of the East Fork of the La Moine River and has a natural area grade of C-. The site is dominated by silver maple (*Acer saccharinum*), hackberry (*Celtis occidntalis*), and Osage orange (*Maclura pomifera*). The site is only lightly grazed, with a good herbaceous understory.

Agricultural Land

Agricultural lands are the dominant plant community (63.29 percent) within the project corridor. This cover type is planted to row crops such as corn (*Zea mays*), soybeans (*Glycine max*), or small grains. This cover type also includes crop fields temporarily fallow because of rotation schedules. Boundaries of this community often have tree-lined fence rows.

Pasture

Pasture communities represent 4.32 percent of the project corridor. They are dominated by forage grasses and legumes similar to hayfields, but they are fenced and grazed by livestock, being too small or otherwise unsuitable for row crop production (e.g., too much slope for operation of farm equipment). Pasture areas are not mowed and often have scattered cover trees and shrubs (typically less than 20 percent) such as multiflora rose, hawthorn, blackberry, oaks, hickory, elm and red cedar (*Juniperus virginiana*).

Prairie

Formerly occupying 55 to 65 percent of McDonough County, most prairie has been converted to agriculture. This plant community has limited presence within the project corridor (0.17 percent). Remnant prairie occurs at three locations: 1) adjacent to a sand quarry north of Adams Street

(Botanical Site 8 on Exhibit II-3d); 2) across Adams Street from the northern sandpit of the quarry (Botanical Site 10 on Exhibit II-3d); and 3) approximately 300 meters (1,000 feet) north of Adams Street and east of Spring Creek (Botanical Site 5A on Exhibit II-3d). These locations represent glacial drift hill prairie remnants that have been overgrown to varying degrees. Non-native grassland species dominate, including English bluegrass, Canada bluegrass and rough-leaved dogwood (*Cornus drummondii*). Botanical Site 5A is an overgrown glacial drift hill prairie remnant. It was rated a grade C- with potential to recover to grade B- or B with proper management. Dominant tree species consisted of white oak (*Quercus macrocarpa*) and black oak (*Quercus velutina*). Prairie species included leadplant (*Amorpha canescens*), Robin's plantain (*Erigeron pulchellus*), and pale beardtongue (*Penstemon pallidus*). Botanical Site 8 was rated as a Grade D community and was dominated by Japanese chess (*Bromus japonicus*), meadow fescue (*Festuca* elatior), and Canadian goldenrod (*Solidago Canadensis*). Prairie forbs included wild bergamont (*Monarda* fistulosa) and hairy ruellia (*Ruellia humilis*). Botanical Site 10 was rated as a Grade D+ community and was dominated by old field goldenrod (*Solidago nemoralis*) and Canadian bluegrass (*Poa compressa*). Prairie grasses and forbs included big and little bluestems (*Andropogan gerardi*) wild bergamont, rough blazing star (*Liatris* aspera), and rosin weed (*Silphium integrifolium*.).

In addition, there is an area of restored prairie at the Lake View Nature Area at the northwest corner of Springlake Road and TR1020E. Species at this site include warm-season grasses and disturbance-tolerant flowering plants such as big bluestem (*Andropogon gerardii*), wild bergamot, (*Mondarda fistulosa*), gray coneflower (*Ratibida pinnata*), and stiff goldenrod (*Solidago rigida*).

Developed Land

This urban vegetation community includes land that has been landscaped or highly altered and supports structures such as residences (including farms and ancillary buildings), commercial buildings, industrial buildings, air strips, parking lots, mine lands, and roadways. Groundcover varies but primarily consists of turf grass such as fescue or Kentucky bluegrass that is accented with ornamental flowers, trees, and shrubs. Lawn weeds such as clover and dandelion (*Taraxacum officinale*) are common. Grassed areas are mowed, and planted trees, shrubs, and flowerbeds are maintained. This community represents 8.55 percent of the project corridor.

Invasive Plant Species

Executive Order 13112, adopted on February 3, 1999, calls for federal agencies to expand and coordinate their efforts to combat the introduction and spread of plants and animals not native to the United States. Approximately 27.5 percent of the State's flora is composed of alien (introduced) plant species. Two species known to occur in the project area are listed by the US Department of Agriculture as noxious plants covered under this Order. These species are Canada thistle (*Cirsium arvensis*) and musk thistle (*Carduus nutans*). Both species can aggressively establish themselves in areas of disturbed soil.

Invasive or nuisance species can establish themselves in rights-of-way during initial highway construction or afterwards because of maintenance practices. Because the proposed project is on new alignment, there is a possibility that it will introduce noxious and nuisance species to areas where they currently do not exist within the right-of-way. The IDOT will continue to implement the noxious and nuisance weed control programs along the new right-of-way.

II.E.5 Threatened and Endangered Species

Federal Species

The US Fish and Wildlife Service (FWS) "Redbook" of endangered and threatened species lists the Indiana bat *(Myotis* sodalis), prairie bush clover (*Lespedeza leptostachya*), Mead's milkweed (*Asclepias meadii*), and eastern prairie fringed orchid (*Platanthera leucophea*) as potentially occurring in McDonough County.

Indiana bat (federally and state endangered) winter habitat consists of caves and mines where individuals hibernate. Summer habitat consists of riparian corridors and associated upland woodlands. Roost trees used by Indiana bats occurring in riparian forest along the East Fork of the La Moine River may provide foraging habitat for this species. However, mist net studies found none. Most of the riparian and associated woods in the project area lack mature or dead trees containing peeling bark. The proposed project would not impact wintering or maternity tree habitat. Although there is potential foraging habitat in the project area, the project would not impact this habitat. The proposed project would not impact the Indiana bat.

The prairie bush clover (federally and state endangered), Mead's milkweed (federally and state threatened), and eastern prairie fringed orchid (federally and state threatened) occur in dry to mesic prairies with gravelly soil, virgin prairies, and mesic to wet prairies, respectively. There is an historical record for the occurrence of the eastern prairie fringed orchid in McDonough County. There are a number of small prairie remnants in the project area (see Plant Communities section). Plant surveys in these areas did not locate any of these species. Therefore, the project would not impact the prairie bush clover, Mead's milkweed, or eastern prairie fringed orchid.

State Species

The Illinois Endangered Species Protection Board lists several species as occurring in McDonough and adjacent counties. The Illinois Department of Natural Resources Natural Heritage Database (IDNR Agency Action Report dated August 27, 1996) indicates the loggerhead shrike (*Lanius ludovicianus*) and bunch flower (*Melanthium virginicum*) as occurring in the project area. A more recent review (2003) of the Natural Heritage database indicates the regal fritillary (a butterfly) as occurring in the project corridor. In addition, field observations indicate the presence of brown creeper (*Certhia americana*), sandhill crane (*Grus canadensis*), northern harrier (*Circus cyaneus*), and Hill's thistle (*Cirsium hilli*). Local observations include Henslow's sparrow (*Ammodramus henslowii*), red-shouldered hawk (*Buteo lineatus*), and bald eagle (*Haliaeetus leucocephalus*).

The loggerhead shrike is listed as threatened in the State of Illinois. The loggerhead shrike prefers open agricultural land interspersed with grassland and fencerows. Nesting is associated with fencerow habitat of Osage orange, honey locust, red cedar and wild rose. This species has been known to nest within five kilometers (eight miles) of the project area. Since no loggerhead shrike were sited during a four-season inventory, it is unlikely that the project will adversely affect this species.

The bunch flower is listed as threatened in the state. This species is characteristic of native prairie habitats and has been found in the county in recent years. Botanical surveys conducted did not find this species in the project area. Therefore, the bunchflower would not be affected by the proposed project.

The state threatened brown creeper occupies dense stands of deciduous and mixed woodlands, with floodplain forest apparently being its primary habitat. Relatively mature stands and dead trees with peeling bark are preferred for nesting. Brown creepers are a relatively common winter

resident of west central Illinois. They were observed within the project area during fall (one individual) and winter (five individuals) surveys within upland forest areas along the East Fork of the La Moine River. The species was not observed in the project area during the breeding season. Therefore, the proposed project would not impact the brown creeper.

The sandhill crane is listed as threatened in Illinois. Sandhill cranes nest in large undisturbed freshwater marshes and prairie ponds. Its nest typically consists of a large mound of grass or uprooted plants. Large undisturbed marshes are not available in the project area, nor were any nesting sites or individuals observed during field surveys. Therefore, the proposed project would not affect the sandhill crane.

The state endangered northern harrier generally nests in large undisturbed grasslands and marshes. Harriers hunt over open grassland including pastures and fallow fields, and most harrier nests in Illinois are found in grasslands with an area of at least 60 hectares (148 acres) (Herkert, 1992). Although the project corridor may provide hunting and foraging opportunities, large undisturbed grasslands do not occur in the project area and this species was not found in avian surveys. Thus, the northern harrier would not be affected by the proposed project.

Hill's thistle is also listed as threatened in Illinois. This species prefers dry, open prairies and is currently known from only about twenty sites in the state, including one location in McDonough County. This site is approximately 3.2 kilometers (two miles) east of Argyle Lake State Park in Thistle Hills Reserve. Field surveys did not find this species within the project area. Therefore, the project would not affect this species.

Henslow's sparrow is listed as endangered in Illinois. The preferred breeding habitat of this species is large contiguous expanses (greater than 50 hectares or 123.5 acres) of grasslands that are characterized by tall, dense grass with a well-developed litter layer and a relatively high coverage of standing dead vegetation. These grassland areas can support some sparse woody vegetation, but extensive woody invasion preclude use by Henslow's sparrow. Habitat area is considered a limiting factor for Henslow's sparrow; only large grasslands support persistent populations (USFWS, 1996). The Henslow's sparrow was identified at two locations in the project corridor. The first is a 46.5-hectare (115-acre) area along the west edge of the proposed right-of-way and south of Adams Street. A second habitat area encompasses 4.0 hectares (10 acres) along the east edge of the proposed right-of-way, immediately north of Adams Street. In 1998, Henslow's sparrows were spotted at these locations during the breeding season. According to an area ornithologist, Henslow's sparrows were only observed at these locations once between 1972 and 1999 (Franks, 1999).

The state threatened red-shouldered hawk prefers deciduous lowland forest, especially where there is standing water. It is an occasional migrant and summer resident in central and northern Illinois. The presence of suitable habitat for this species is limited in the project area and this species was not observed in the project area by field surveys. Therefore, the proposed project would not affect the red-shouldered hawk.

The state threatened bald eagle prefers relatively undisturbed areas near large rivers or lakes. Nests are located in high branches of old trees and are generally reused form year to year. Habitat for this species is not found within the project area. The bald eagle would not be affected by the proposed project.

The habitat for the state threatened regal fritillary (a butterfly) is native tall grass prairie and other open sites. The adults feed on nectar from flowers of milkweeds, thistles, red clover, and mountain mint (US Geological Survey, 2000). The regal fritillary has been observed on the Thistle Hills Land and Water Reserve west of Macomb and just east of the project corridor. There are no areas of suitable habitat for this species within the project corridor.

In Illinois, river otters have been found in shallow lakes, sloughs, rivers, streams, drainage ditches and ponds. It appears that important features of high quality river otter habitat include extensive riparian forests (or emergent wetland vegetation), good water quality and healthy fish populations, the presence of suitable den sites (such as log piles), open water during winter, and a minimal amount of human disturbance (Anderson and Woolf 1984). River otters require linear home ranges that can be up to 80 kilometers (50 miles) long and mainly consist of riverine channel or shoreline. However, at any one time only a portion of the range is used.

The IDNR introduced river otters (15 males, 9 females) into the La Moine River basin near Brooklyn (northern Schuyler County) in 1997. IDNR furbearer sign surveys have indicated the presence of river otters near Colmar (approximately 12 to 15 miles SW of Macomb) during the 2000, 2001, and 2002 seasons. From this area, otters can disperse upstream throughout the La Moine River tributary system. Therefore, river otters could occur in streams, lakes, and ponds within the project corridor.

It is unlikely that the river otter breeds in the project corridor because of the fragmented nature of the landscape. Otters probably use portions of the project corridor for foraging and dispersal. Work in and adjacent to the East Fork of the La Moine River involves bridging the stream. Work in wetlands and lakes involves filling. These activities should not cause the loss of foraging habitat or dispersal corridors. The project will not affect the river otter.

II.E.6 Nature Preserves and Natural Areas

Illinois Land and Water Reserves

The Illinois Register of Land and Water Reserves is a land and water protection program established by the Illinois Nature Preserves Commission under the authority of the Illinois Natural Areas Preservation Act (525 ILCS 30). Reserves support natural heritage resources or archaeological resources of statewide significance, the long-term protection and stewardship of which is in the public interest. Actions undertaken by a State agency or local government that will disrupt a reserve must have a finding by the Illinois Nature Preserve Commission and the IDNR that the action is in the public interest (Subpart C, Section 4010.310b).

There is one **27.3-hectare (67.4-acre)** reserve site **known as Thistle Hills Land and Water Reserve** in the project area**, though outside the** 600-meter project corridor. Thistle Hills **is** approximately 3.2 kilometers (two miles) east of Argyle Lake State Park (Exhibit II-4 shows the location of Argyle Lake)**. In 1997, 5.7 hectares (14.2 acres) were originally** designated as a Reserve (Hill, 1998) **and in 2000, an additional 21.5 hectares (53.2 acres) were added to connect the Reserve to a 4.0-hectare (10-acre) prairie restoration site. The original** 5.7-hectare (14.2-acre) parcel contain**s** the state's second largest-known population of the Hill's thistle (*Cirsium hillii*), a state-listed threatened species currently known from approximately 20 sites, most of which are east of the Illinois River (Herkert, 1994). The site also contains the state endangered regal fritillary, a butterfly.

The original 5.7-hectare (14.2-acre) Thistle Hills Reserve contains a series of five "fingers" of Grade C+ glacial drift hill prairie remnants that have the potential to recover to Grade B with proper management (Hill, 1998). There is a rich diversity of prairie plants, including leadplant (*Amorpha canescens*), white false indigo (*Baptisia leucantha*), New Jersey tea (*Ceanothus americanus*), little bluestem (*Schizachyrium scoparium*), northern dropseed (*Sporobolus heterolepsis*), and birdsfoot violet (*Viola pedata*). Grade C mesic and dry-mesic upland forest surround the hill prairie remnants. Dominant trees include black oak (*Quercus velutina*), shingle oak, white oak, and shagbark hickory. The woodland was identified as Regionally Exceptional, with suitable habitat for the Illinois-listed endangered Wolf's bluegrass (*Poa wolfii*) (Hill, 1998). Regionally Exceptional Natural Areas are natural communities or groups of communities that

support a noteworthy assemblage of native species within a greatly degraded context (e.g., degraded prairies in railroad rights-of-way) (White, 1978). The character of Thistle Hills Reserve is described by Moorehouse (1997) and by Hill (1998).

The 21.5-hectare (53.2-acre) addition contains glacial drift hill prairie remnants and approximately 8.1 hectares (20.0 acres) of mesic and dry-mesic upland forests of Grade C-D quality. The balance of the site contains a 4.0-hectare (10.0-acre) restored prairie, a 0.4-hectare (1.0 acre) pond and 5.3 hectares (13 acres) of cropland. The restored prairie provides nesting habitat for the state-endangered Henslow's sparrow.

A 46.2-hectare (114.2-acre) addition is proposed to the Thistle Hills Land and Water Reserve, bringing the Reserve to a total of 73.5 hectares (181.6 acres). This addition is proposed to protect habitat for endangered and threatened species and other habitat sensitive native flora and fauna. It is composed of two small loess hill prairie remnants, mesic and dry-mesic woodlands, a small wet-mesic floodplain forest, and a small seep/sedge meadow. The northwestern portion of the proposed addition provides breeding and foraging habitat for the Henslow's sparrow and would be within the 600-meter project corridor, but outside of the proposed right-of-way (see Exhibit II-3d).

Illinois Natural Area Inventory Sites

There are t**hree** designated Illinois Natural Area Inventory (INAI) sites within five kilometers (3.1 miles) of the project: Lake Argyle Barrens**,** Sphagnum Seep**, and Thistle Hills**. **Lake Argyle Barrens and Sphagnum Seep** are within Argyle Lake State Park approximately 3.2 kilometers (2 miles) west of the northern corridor (Hill, 1998). The Lake Argyle Barrens INAI site is also a dedicated Illinois Nature Preserve, called the Argyle Hollow Barrens Nature Preserve (McFall and Karnes, 1995). **Thistle Hills INAI site is within the Thistle Hills Land and Water Reserve.** The Good Hope March INAI site is about 15.3 kilometers (9.5 miles) to the northeast, and the Grisby's Marsh INAI site is 20.1 kilometers (12.5 miles) to the southwest.

II.F WATER RESOURCES

This section describes the characteristics of the project area's Surface Waters, Groundwater, and Water Quality.

II.F.1 Surface Waters

The project area is contained within the East Fork La Moine River Basin, part of the overall Illinois River drainage system. (See Exhibit II-4.) The East Fork of the La Moine River joins the La Moine River approximately 7.25 kilometers (4.5 miles) west of the Town of Tennessee. The La Moine River joins the drainage area of the Illinois River near Havana, Illinois and ultimately discharges to the Mississippi River.

East Fork of the La Moine River

The East Fork of the La Moine River flows through a relatively wide valley and has a well-developed flood plain. It is a low gradient stream averaging approximately 23 meters (75 feet) in width. Bottom substrates are primarily sand and silt with extended pools and occasional gravel and cobble riffles when water levels are low. The bottomlands, located in close proximity to the river, are subject to seasonal flooding. The river channel does not directly connect to some of the wetlands and lowland areas. Their hydroperiod is a direct function of the seasonal flooding. Additionally, the depositional characteristics of seasonal flooding increases soil buildup and supplies nutrients to the inundated areas.

In 1984, stream biologists from the Illinois Environmental Protection Agency (IEPA) and the Illinois Department of Natural Resources (IDNR) developed the Biological Stream Characterization (BSC), a stream quality index assessing the biological condition of Illinois streams (IEPA, 1996). The BSC work group developed a five-tier classification system based on fish and aquatic macroinvertebrate diversity and the associated index of biological integrity. Under this system, Illinois streams or segments thereof are assigned to categories from Class A (Unique Aquatic Resource) through Class E (Restricted Aquatic Resource). In the project area, the East Fork of the La Moine River is classified as a Class C stream (Moderate Aquatic Resource) upstream from Spring Creek, and a Class B stream (Highly Valued Aquatic Resource) downstream from Spring Creek (IEPA, 1996). The National Wetland Inventory (NWI) classification for the East Fork is a lower perennial, riverine system with an unconsolidated bottom and a permanently flooded water regime.

Tributaries to East Fork of the La Moine River

The remainder of the streams in the basin flow in relatively narrow valleys that preclude the development of wide bottomland flood plains. These are first and second order tributaries of the East Fork of the La Moine River. Their steep valley walls topographically define their flood plains. Many of these smaller streams are in valleys that intercept bedrock formations and as such have rocky/cobble type substrates. They also exhibit some riffle and pool type structures in various stream reaches. Small groundwater discharge points are intercepted in isolated sites along some of the valleys. These seeps, either from fracture zones in the limestone or from gravel lenses in the glacial till, augment the surface water flow in the streams. Even with this additional flow, many of these tributaries will dry during late summer or during prolonged periods of drought conditions. Many of the streams that do not dry along their entire length exhibit an intermittent nature in their upper reaches.

Spring Creek begins at the outlet of Spring Lake and flows southwest to the confluence with the East Fork of the La Moine River west of Macomb. Spring Creek is classified as a Class B stream (Highly Valued Aquatic Resource) (Bertrand, Hite and Day, 1996). The NWI classification for this creek is a lower perennial, riverine system with an unconsolidated bottom and a permanently flooded water regime.

Kepple Creek begins east of Macomb and flows north and east to the confluence with the East Fork of the La Moine River (see Exhibit II-2m). There is no IEPA rating for this stream. The NWI classification for this creek is an intermittent, riverine system with a streambed and a semipermanently flooded water regime, excavated.

Spring Lake

Spring Lake is northwest of Macomb (see Exhibit II-1 and Exhibit II-4). It was formed by the damming of Spring Creek. The lake is 277 acres in size and is owned by the City of Macomb. The designated uses of the lake include public water supply, aquatic fish, fish consumption, primary (swimming), and secondary (recreation) contact. The lake is not depicted on the NWI map, but can be classified as a limnetic lake.

Man-Made Impoundments

The project area does not contain any natural lakes, but has numerous man-made impoundments and one man-made lake. These impoundments include small stock watering ponds in farm pastures created by excavation and/or damming small drainageways. Approximately 7.1 hectares (17.5 acres) of these ponds occur in the project corridor. Most of these ponds are classified on the NWI maps as palustrine, unconsolidated bottom, intermittently exposed, impounded wetlands. Some of these ponds are considered jurisdictional wetlands and are further discussed in the wetland section.

Deer Ridge Lake is a man-made lake built in 2000 and is approximately six hectares (15 acres) in size. It is approximately 1.6 kilometers (one mile) south of CH 14/1350N and approximately 0.4 kilometer (0.25 mile) west of CH 14/900E (see Exhibit II-2c). This lake is surrounded by a planned residential development and is actively used for water sports.

Aquatic Biota

Fish

The Illinois DNR conducted a fish survey of the East Fork of the La Moine River in 1998, just southwest of the proposed east crossing of the river by the proposed project. The survey identified 15 species of fish. Of the 210 fish sampled, the most common was the green sunfish (*Lepomis cyanellus*), red shiner (*Cyprinella lutrensis*), and carp (*Cyprinus carpio*), which represented 38.6 percent, 28.1 percent, and 9.5 percent of the catch, respectively. Man-made ponds and impoundments in the project area support locally common and introduced species. In privately stocked ponds, fish populations typically include game fish such as bass and blue gill. Those found in stream impoundments are composed of species common in the stream, occasionally supplemented with game species.

Mussels

During 1996 and 1997, surveys for mussels were done at three sites in the East Fork of the La Moine River's watershed. Sampling sites in the East Fork included locations upstream and downstream of the project area. A third site was sampled in Spring Creek, west of the project area. Table B-5 in Appendix B lists the species collected. Thirteen individual mussels representing seven species were found alive in the East Fork of the La Moine River. The eastern crossing contained one live mussel (maple leaf, *Quadrula quadrula*). The western crossing contained 12 individuals from six species. The most common were the maple leaf and plain pocket (*Lampsilis cardium*) representing four and three individuals respectively. All species collected are relatively widespread and common in the state (Taylor, Cummings and Wetzel, 1998).

Public Water Supply

Spring Lake serves as a pubic water supply reservoir for the City of Macomb and Western Illinois University. A narrow parcel of land crosses the proposed alignment at design station 106+850 (see Exhibit II-3f). According to the Fire Chief of Macomb, this is likely the route of the water main from Spring Lake to the City of Macomb.

II.F.2 Groundwater

General

Pleistocene glaciation and the underlying Pennsylvanian and Mississippian bedrock have heavily influenced the distribution of groundwater resources in the project area.

Portions of the project area have overlying layers of Pennsylvanian limestones, shales and coals that supply limited volumes of water suitable for individual domestic wells. Deep sandstones (St. Peter and others) do not normally yield water in sufficient quantity or quality to be considered a viable potable water source. Therefore, most water wells in the project area are either contained in the Keokuk-Burlington (K-B) formation (a Mississippian dolomitic limestone), or are in the numerous gravel lenses contained in the shallower overlying glacial till.

The Keokuk-Burlington (K-B) formation is encountered at depths of approximately 45 meters in the eastern portions of the La Moine River watershed.

Many of the first and second order streams within the project area lie within deeply incised channels that extend well into the glacial till. Groundwater seeps emanating from either fractures in the limestone bedrock or from gravel lenses in the glacial till augment the surface flow in these small streams.

Water Supply

Most communities in the county supplement surface water supplies with several sand and gravel aquifer wells. Domestic water supplies draw from the Keokuk-Burlington (K-B) limestone. This formation is up to 90 meters (295 feet) thick and wells drilled into the formation normally must penetrate up to 30 meters (98 feet) into the limestone to provide an adequate yield. Discharge rates are normally considered adequate for domestic or small farm use, ranging from 19 to 75 liters per minute (5.0 to 19.8 gallons per minute). This formation does not normally yield sufficient quantities of water for municipal use.

Domestic wells are also in the glacial till overlying the K-B formation. These wells vary in depth from 6 to 25 meters (20 to 80 feet) and are drilled into the sand and gravel drift aquifers scattered throughout the glacial till. The domestic wells can yield viable quantities of water, but are primarily limited to domestic use. Many of these wells are larger diameter wells (0.6 to 1.2 meters, or two to four feet) dug into the formation. The larger diameter of the well increases the storage of the system and allows very low yielding wells to supply adequately domestic and small farm facilities. These wells are, however, very susceptible to water level fluctuations and can dry up during prolonged periods of low precipitation or if the gravel/sand aquifer is disturbed. Exhibit II-3a and Exhibit II-3d illustrate the location of public and private wells within 330 meters (1,082 feet) of the project's right-of-way.

The 1987 Illinois Groundwater Protection Act protects groundwater resources from degradation and prevents difficult and expensive clean-up efforts (IEPA, 1994a, 1995a). The Act allows for the establishment of both regulated groundwater recharge areas and groundwater protection areas. No areas have been designated as principal or sole-source aquifers in Illinois by the USEPA under Section 1424(c) of the Safe Drinking Water Act. No regulated groundwater recharge areas are within the project corridor.

The project corridor passes within a portion of a wellhead protection recharge area for a municipal well for the Jackson Heights Mobile Home Park, which is southwest of the curve in CH14 at 1350 N and 900E (as of March 2000, this development remained closed). One private well, located on the Jerry Lester property in the northeast quadrant of US 67 and the proposed alignment, may be within 60 meters (200 feet) of the project right-of-way.

II.F.3 Water Quality

Groundwater

In general, water quality in the surficial gravel/sand lenses and in the K-B formation is good. The water is hard (between 200 and 500 milligrams per liter (mg/l)) and iron concentrations are often above the state standard of 0.3 mg/l. Total dissolved mineral content of the water varies but can be as high as 1000 mg/l (in wells in the deeper bedrock), well above the standard of 500 mg/l. Dissolved gases, including carbon dioxide (CO_2), hydrogen sulfide (H_2S) and nitrogen (N), have been identified in waters within the basin. Concentrations of nitrate and other chemicals are common in the Lower Illinois River Basin and may occur in the project area. There are no reports of widespread bacterial pollution of groundwater sources. Although individual wells may be susceptible to pollution from contaminated recharge water (caused primarily by improper well location and construction, or poor surface pollution management practices), it occurs very infrequently.

Streams

The dominant land use in the project area is agricultural. Surface runoff from agricultural fields and from local feed lots is a major contributor to the sediment load in the streams of the project area. These non-point discharges have lowered water quality in some stream sections by increasing levels of nitrogen, phosphorus, coliform bacteria, and herbicide/pesticide chemical residues. Turbidity and siltation has reduced the diversity of fish, invertebrates and aquatic flora. Smith (1971) characterizes the primary problems in the La Moine River system as siltation, severe agricultural pollution, and desiccation of headwater areas during drought periods. Erosion from area construction and mining activities has also contributed to increased sedimentation. Wastewater treatment facilities discharge into the La Moine and its tributaries near Macomb.

East Fork of the La Moine River

The East Fork of the La Moine River reaches its confluence with the La Moine River west of the project area. The river flows through a heavily wooded drainage basin. Water quality is good, although upland agricultural practices and wastewater discharges in Colchester and Macomb very likely influence water quality. The IEPA (2002) assesses the East Fork of the La Moine River in the project corridor as being in full support of its designated uses (public water supply, overall, aquatic life, and fish consumption uses). The IEPA (2002) considers Kepple and Spring Creeks to have overall and aquatic life designated uses. However, these uses have not been assessed by the IEPA.

Spring Lake

Spring Lake is designated as full support towards supplying drinking water. Aquatic life, fish consumption and swimming are partially supported by the lake. The lake is listed as impaired by the IEPA (2000). Types of impairments include nutrient loading of phosphorus, nitrogen and nitrates, siltation, suspended solids, and excessive algal growth. Non-point sources of impairment include the production of row crops, habitat modification through stream bank modification and destabilization, and recreation/tourism activities.

Farm Ponds and Impoundments

Many of the farm ponds in the project area are subject to excessive levels of nitrogen and phosphorus contained in surface runoff from nearby agricultural row crop fields. As a result, the waters are nutrient rich and can have excessive algal material present, particularly in late summer. This is also true of several City of Macomb impoundments.

II.G FLOOD PLAINS

Based on a review of the available Federal Emergency Management Agency Flood Insurance Study -- Flood Boundary Maps and the Flood Insurance Rate Maps, three identified base (100-year) flood plains are found within the project corridor. These base flood plains are associated with the East Fork La Moine River (once west of Macomb and once east of Macomb) and Spring Creek. The East Fork of the La Moine River serves as the major surface water resource and natural drainage system in the study area. The width of the flood plain for the East Fork of the La Moine River ranges from 130 meters to 300 meters (426 to 984 feet). For Spring Creek, the flood plain width ranges between 100 and 300 meters (328 to 984 feet). The base flood plain is illustrated on Exhibit II-3b, c, d, l, and k. Identification of these resources was made in accordance with Executive Order 11988 “Floodplain Management” and Title 23 of the *Code of Federal Regulations*, Section 650, Subpart A; and Section 26-7, “Flood Plain Finding,” as contained in the IDOT, Bureau of Design and Environment (BDE) Manual of Policies and Procedures (Volume 1), Chapter 26. The natural and beneficial values of the flood plains of the East Fork La Moine River and Spring Creek in the project corridor include: natural moderation of

floods, including reduced flood velocities and flood peaks, wooded wildlife habitat, agriculture, and wetlands. The flood plains also reduce sedimentation, filter nutrients and impurities from overland runoff, and promote infiltration and groundwater recharge. Section II.H, "Wetlands" below describes the functions of project wetlands. There are no regulatory floodways identified on the flood insurance maps.

II.H WETLANDS

Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils conditions" (Federal Register 1980, 1982). Table II-8 presents the area of wetlands by class that occur in the East Fork of the La Moine River basin within McDonough County. The total basin area in the county is 57,359 hectares (141,662 acres). Of this area, 1,333.4 hectares (3,293.1 acres) or 2.3 percent is wetland.

Table II-8. Wetlands in the East Fork La Moine River Basin, McDonough County

Wetland Class	Hectares (Acres)	Percent of Total Wetlands in Basin
Aquatic Bed	3.4 (8.4)	0.3%
Emergent	465.0 (1,148.4)	34.9%
Emergent/Forested	3.0 (7.3)	0.2%
Emergent/Scrub-shrub	49.0 (121.0)	3.7%
Forested	603.0 (1,489.3)	45.2%
Forested/Emergent	10.5 (25.9)	0.8%
Stream Bed	55.8 (137.8)	4.2%
Scrub-shrub	30.3 (74.8)	2.3%
Scrub-shrub Emergent	13.0 (32.1)	1.0%
Unconsolidated Bottom	100.0 (247.0)	7.5%
Unconsolidated Shore	0.4 (1.1)	0.0%
Total Wetlands	1,333.4 (3,293.1)	100%
Total Area in Basin	57,359 (141,662)	

Note: Data from the National Wetland Inventory Database, Illinois Department of Natural Resources.

For the purposes of complying with the Section 404 program, the federal government endorses the use of two separate delineation manuals: the 1987 Corps of Engineers *Wetland Delineation Manual* and the Department of Agriculture's *National Food Security Act Manual (third edition)*. A 1994 Federal Memorandum of Agreement between the Department of Defense, Department of the Interior, Environmental Protection Agency, and the Department of Agriculture defines situations to which these two manuals may be applied. It requires the use of the 1987 Corps of Engineers *Wetland Delineation Manual* (with current national Corps of Engineers guidance) by all federal resource agencies on non-agricultural land for Section 404 purposes. When determinations or delineations are made on agricultural land for Section 404 purposes, the *National Food Security Act Manual* must be used.

II.H.1 Project Area Wetland Types

The six primary wetland communities found within the project area are wet floodplain forest, wet shrubland, marsh, wet meadow, sedge meadow, and seeps.

Wet Floodplain Forest

Wet floodplain forests are found in narrow bands on the lower terraces associated with perennial waterways. Flooding occurs with greater frequency and duration than in mesic floodplain forests, being intermittent to seasonal and frequently having saturated soils. This community has an over story tree canopy more than six meters (20 feet) tall. Dominant trees include silver maple, cottonwood (*Populus deltoides*), sycamore (*Platanus occidentalis*), ash, black willow (*Salix nigra*), and American elm. Understory cover consists of an intermediate shrub layer and ground cover. Shrubs include cock-spur hawthorn (*Crataegus crus-galli*), mulberry (*Morus alba*), buttonbush (*Cephalanthus occidentalis*), multiflora rose, Missouri gooseberry (*Ribes missouriense*), and common elder (*Sambucus canadensis*). Understory plants include honewort, late boneset (*Eupatorium se*rotinum), lyme grass (*Elymus virginicus*), jewelweed (*Impatiens capensis*), reed canary grass (*Phalaris arundinacea*), and Canada clearweed (*Pilea pumila*). The canopy is typically dense, while understory varies from sparse to moderately dense. This community represents a minor (0.25 percent) cover type within the corridor. Many wet floodplain forests are highly degraded because of grazing.

Wet Shrubland

Wet shrubland areas within the project corridor are limited (0.1 percent), occurring west of CH14/900 East and northwest of Grandview Drive. This community has more than 25 percent cover by woody vegetation less than six meters (20 feet) tall. Shrubs, young trees, and trees are small or stunted because of environmental conditions (Cowardin et al., 1979). Typical species include sandbar willow and dogwoods. The understory typically includes beggar-ticks (*Bidens* spp.), redtop (*Agrostis alba*), reed canary grass, and barnyard grass (*Echinochloa crus-galli*).

Marsh

Marsh communities represent a minor component of the vegetation within the project corridor (0.6 percent). These areas have less than 25 percent cover by trees and are dominated by grass-like plants such as rushes (*Juncus* spp.), bulrushes (*Scirpus* spp.), fowl manna grass (*Glyceria striata*), arrowhead (*Sagittaria latifolia*), rice cutgrass (*Leersia oryzoides*), sawtooth sunflower (*Helianthus grosseserratus*), and cattails (*Typha* spp.). Within the corridor, the soil is typically mineral under an organic surface layer. These areas hold shallow water throughout most of the growing season.

Wet Meadow

Areas of wet meadow often have inundation in early spring and saturated soils through the balance of the growing season, even becoming dry in some summer months. Grasses and grass-like plants such as reed canary, redtop, sedges (*Carex* spp.), common horsetail (*Equisetum arvense*), English bluegrass, and red-rooted spikerush (*Eleocharis erythropoda*) characterize wet meadows. These communities often reflect disturbance and represent a small component of the corridor's vegetation (0.39 percent).

Sedge Meadow

This community has limited presence within the project area (0.18 percent) and is dominated by various sedges or wet prairie species. As with the wet meadow community, the sedge meadow has shallow water table and saturation to shallow inundation during the growing season. Unlike the wet meadow community, the plant composition reflects minimal disturbance. Various sedges include fox sedge, river sedge, prickly sedge (*Carex stipata*), hairy-fruited lake sedge (*Carex trichocarpa*), Emory sedge (*Carex emoryi*), and meadow sedge (*Carex granularis*).

Seeps

Seeps are scattered within the project corridor, primarily within forested areas associated with ravines leading to major drainages. Seeps develop at locations where groundwater flows to the surface. Such areas are generally small and support plants such as river birch (*Betula nigra*), jewelweed, and late goldenrod (*Solidago gigantea*). Seeps are an uncommon wetland community type within the project area (0.05 percent).

II.H.2 Wetland Quality and Classification

The Floristic Quality Index (FQI) is used to assess the ecological integrity of plant communities. This index provides a measure of the environmental integrity of each individual plant community. The FQI is determined by summing the numerical ratings for all species observed at the site and dividing it by the square root of the total number of observed species. Plants not native to Illinois are not scored. FQI values of ten or less indicate low natural character, while values greater than 20 may be considered environmental assets. Eleven of the 33 wetland sites in the project area have FQI values under 10 (see Table II-10), while two sites have FQI values greater than 20. Under State statute, impacts to wetlands with FQI values greater than 20 must be replaced using a 5.5 to 1.0 mitigation ratio.

The US Fish and Wildlife Service classifies plant species based on their frequency of occurrence in wetlands versus nonwetlands. These plant species are then given values that range from -5 (always occur in wetlands) to +5 (never occur in wetlands). Mean Wetness is the average derived from all the values in a wetland community. This value characterizes the plant community in terms of hydrological characteristics. Values near –5 indicate inundation or surface saturation for long time periods. Values near zero indicate surface saturation for short time periods. Values that are plus indicate that the plant community is nonwetland. The average wetland mean wetness in the study corridor is -2.4 (see Table II-9). This indicates that most of the study corridor wetlands have an intermediate surface saturation.

The percent adventive species is also used as a measure of site disturbance. The measure is obtained by dividing the number of non-native (exotic) plant species in a plant community by the total number of plant species observed within the plant community. The higher the percentage is, the more non-native plant species occur within the site. The percent adventive of the wetlands in the project corridor ranged from 4 to 40 (see Table II-9). On average, 17 percent of the plants occurring in these wetlands are aliens (introduced).

II.H.3 Wetlands in the Project Corridor

Thirty-three wetland sites occur in the project corridor. Their locations are shown in Exhibit II-2b through Exhibit II-2f, as well as Exhibit II-2i through Exhibit II-2k, and their characteristics and functional values are presented in Table II-9 and Table II-10. Wetland areas include ponds, wet meadows, floodplain forest, seeps, wet shrublands, pond/wet meadows, and wet meadow/marshes. Project corridor wetlands range in size from 0.1 hectare (0.25 acre) to 10.9 hectares (26.9 acres), with all but five wetlands less than or equal to one hectare (2.47 acres).

Table II-9. Characteristics of INHS Wetlands Within the Macomb Area Study Corridor

INHS Site No.	Dominant Plant Species	Soils	Hydrology	Mean Wetness	Percent Adventive
W3	Osage Orange, Honey Locust, American Elm	Otter silt loam	Watermarks, Drift lines	-1.0	8
W4	Black Willow, Silver Maple	Undetermined	Inundated	-2.3	20
W5	Silver Maple, American Elm, Swamp Dock	Undetermined	Saturated at surface	-3.5	10
W6	Swamp Dock, Emory Sedge, Silver Maple	Otter silt loam	Saturated at surface	-4.4	5
W8	Silver Maple, Osage Orange, Prickly Sedge	Otter silt loam	Saturated near surface	-1.6	40
W11	Silver Maple, Giant Ragweed, Reed Canary Grass	Sawmill silty clay loam	Saturated at surface	-1.6	14
W13	Silver Maple, Honey Locust	Otter silt loam	Drift lines	-0.4	18
W14	Flagroot, Giant Ragweed, Fox Sedge	Birds silt loam	Saturated at surface	-2.8	24
W22	Black Willow, Reed Canary Grass, Common Smartweed	Sawmill silty clay loam	Inundated	-3.5	26
W25	Honey Locusts, Red Top, Fox Sedge	Otter silt loam	Saturated at surface	-1.9	18
W26	Large Fox Sedge, Missouri Ironweed	Undetermined	Saturated near surface	-2.6	8
W27	False Indigo Bush, Arrowhead	Undetermined	Saturated at surface	-3.8	4
W30	Black Willow, Duckweed, Reed Canary Grass	Undetermined	Inundated	-4.8	20
W31	Black Willow, Elderberry, Virginia Wild	Birds silt loam	Saturated	-1.3	13

Table II-9. Characteristics of INHS Wetlands Within the Macomb Area Study Corridor

INHS Site No.	Dominant Plant Species	Soils	Hydrology	Mean Wetness	Percent Adventive
	Rye				
W33	Rice Cut Grass	Undetermined	Inundated	-3.6	15
W35	Black Willow, Cattail	Undetermined	Inundated	-2.1	5
W36	Green Ash, Hairy-fruited Large Sedge	Undetermined	Drainage pattern	-2.5	20
W44	Black Willow, Fox Sedge, Rice Cut Grass	Undetermined	Saturated at surface	-0.8	31
W45	Black Willow, Rice Cut Grass	Undetermined	Inundated	-2.4	13
W47	Fox Sedge	Undetermined	Depression	-2.0	16
W49	Sandbar Willow, Beggar's Ticks, Meadow Fescue	Undetermined	Inundated	-2.8	15
W50	Willow, Beggar's Ticks, Kentucky Bluegrass	Undetermined	Inundated	-3.0	15
W55	Large Fox Sedge, Bottlebrush Sedge, Reed Canary Grass	Birds silt loam	Oxidized rhizosphere	-3.4	14
W58	Silver Maple, Green Ash, Ontario Aster	Birds silt loam	Drift lines	-2.8	13
W59	Jewelweed, Rice Cut Grass, Reed Canary Grass	Undetermined	Depression	-2.7	12
W1a	Black Willow, Panicled Aster, Fox Sedge	Sawmill silty clay loam	Drainage pattern	-0.8	27
W2a	Fox Sedge, Kentucky Bluegrass, Reed Canary Grass	Birds silt loam	Saturated at surface	-2.1	29
W4a	River Birch, Common Horsetail, Jewelweed	Undetermined	Saturated at surface	-1.3	10
W6a	Common Horsetail, Alta Fescue, Mountain Mint	Sawmill silty clay loam	Low-lying	-0.1	12
W7a	River Birch, Black Willow	Undetermined	Inundated	-2.2	8
W8a	Duckweed, Common Smartweed	Undetermined	Inundated	-2.6	27
W12a	Beggar's Ticks, Foxtail Barley, Duckweed	Undetermined	Inundated	-3.2	30
W14a	Black Willow, Panicled Aster, Beggar's Ticks	Undetermined	Inundated	-2.3	16

Table II-10. Sizes and Values of INHS Wetlands Within the Macomb Area Study Corridor

INHS Site No.	Vegetation Type	USFWS Classification*	Size in hectares (acres)	Function	Mean C	FQI
W3	Floodplain forest	PFO1A	Linear	Flood flow alteration; sediment stabilization	2.7	15.6
W4	Oxbow pond	PUBF	0.5 (1.2)	Flood flow alteration; production export	3.4	13.8
W5	Floodplain forest	PFO1C	0.8 (2.0)	Flood flow alteration; production export	3.2	13.1
W6	Marsh	PEMC	0.4 (1.0)	Flood flow alteration; production export	3.4	14.9
W8	Sedge meadow/ forested pasture	PFO1A	5.9+ (14.6+)	Flood flow alteration; sediment stabilization	2.6	15.0
W11	Floodplain forest	PEMA	0.8 (2.0)	Nutrient removal or transformation	2.4	14.7
W13	Floodplain forest	PFO1A	1.7 (4.2)	Flood flow alteration	2.1	11.1
W14	Marsh (3 sites)	PFO1A	0.5 (1.2)	Flood flow alteration; sediment stabilization; production export	2.8	14.3
W22	Wet meadow	N/A	0.6 (1.5)	Flood flow alteration; nutrient removal/ transformation	2.6	9.9
W25	Marsh/seep	N/A	0.6 (1.5)	Ecological – biological diversity; biological asset	2.9	22.9
W26	Marsh/seep	PEMC	0.2 (0.5)	Ecological – biological diversity	3.4	15.8
W27	Marsh/seep	N/A	0.4 (1.0)	Ecological – biological diversity	3.8	18.1

Table II-10. Sizes and Values of INHS Wetlands Within the Macomb Area Study Corridor

INHS Site No.	Vegetation Type	USFWS Classification*	Size in hectares (acres)	Function	Mean C	FQI
W30	Pond	PUBKx	1.4 (3.5)	Storm water treatment	2.8	5.5
W31	Floodplain forest	N/A	0.5 (1.2)	Flood flow alteration	2.3	12.1
W33	Pond	PUBGh	0.4 (1.0)	Surface water storage; livestock use	2.6	8.7
W35	Pond	PUBGh	0.6 (1.5)	Wildlife habitat	2.2	10.2
W36	Marsh	N/A	0.1 (0.2)	Sediment stabilization and filtration	2.5	9.8
W44	Pond	PUBGh	0.4 (1.0)	Surface water storage	2.2	9.4
W45	Pond	PUBGh	0.3 (0.7)	Wildlife habitat	2.2	8.0
W47	Pond	PUBGh	0.2 (0.5)	Livestock watering	1.9	5.6
W49	Wet shrubland	PUBGh	0.1 (0.2)	Wildlife habitat	1.4	6.5
W50	Pond	PUBGh	0.7 (1.7)	Surface water storage	2.6	8.7
W55	Wet meadow	PEMC	10.9 (26.9)	Flood flow alteration; biological diversity	3.1	19.1
W58	Floodplain forest	PFO1A	1.0 (2.5)	Flood flow alteration; sediment stabilization	3.2	14.1
W59	Pond	PUBGh	1.0 (2.5)	Nutrient and sediment removal/transformation	2.4	11.1
W1a	Wet meadow	PEMA/PFO1A	0.38 (0.9)	Surface water storage; wildlife habitat	2.8	18.1

Table II-10. Sizes and Values of INHS Wetlands Within the Macomb Area Study Corridor

INHS Site No.	Vegetation Type	USFWS Classification*	Size in hectares (acres)	Function	Mean C	FQI
W2a	Wet meadow	PEMA	0.13 (0.3)	Nutrient removal/ transformation; detention of surface runoff	2.6	12.7
W4a	Forested seep	PFO1A	0.04 (0.1)	Ecological – biological diversity	3.4	17.5
W6a	Wet meadow	N/A	0.27 (0.7)	Wildlife habitat	3.2	14.6
W7a	Floodplain forest/ sedge meadow	N/A	0.35 (0.9)	Nutrient removal/ transformation; production export	3.1	21.8
W8a	Pond	PUBGh	0.03 (0.1)	Livestock watering	1.8	6.0
W12a	Pond	PUBGh	0.12 (0.3)	Surface runoff filtration; surface water storage	2.4	9.1
W14a	Pond	N/A	0.08 (0.2)	Surface water storage	3.1	19.0

Sources: Admiraal, Larimore, and Keene, 1998 and 1999; Cowardin et. al., 1979

*PEMA - Temporarily flooded, emergent, palustrine wetland

PEMC - Seasonally flooded, emergent, palustrine wetland

PFO1A - Temporarily flooded, broad-leaved deciduous, forested, palustrine wetland

PFO1C - Seasonally flooded, broad-leaved deciduous, forested, palustrine wetland

PUBF - Semipermanently flooded, unconsolidated bottom, palustrine wetland

PUBGh - Diked or impounded, intermittently exposed, unconsolidated bottom, palustrine wetland

PUBKx - Excavated, artificially flooded, unconsolidated bottom, palustrine wetland

While most wetlands in the corridor are dominated by non-native species and all show some level of disturbance (adventive species range from 4 to 40 percent), several wetlands are of special importance. Wetland sites 4a, 25, 26 and 27 are seeps, an uncommon wetland community type in the project area. Wetland site 25 has an FQI of 22.9, and site 7a has an FQI of 21.8 illustrating a strong presence of native flora and making them a botanical asset. Sites 1a, 14a, 27, and 55 have FQIs above 18.

II.I HAZARDOUS AND NON-HAZARDOUS WASTES

II.I.1 Hazardous Waste

The Illinois State Geological Survey (ISGS) prepared a *Preliminary Environmental Site Assessment* (IDOT, July 2001) for the project corridor. The ISGS reviewed the USEPA's listing of potential, suspected, and known hazardous waste or hazardous substance sites in Illinois (i.e. the Comprehensive Environmental Response, Compensation, and Liability Information System or CERCLIS). They conducted the review to ascertain whether the proposed project would involve any listed site(s). Based on this review, it was determined that the proposed alignment would not require any right-of-way or any easement from a site included in the CERCLIS listing as of November 21, 2001.

II.I.2 Non-Hazardous Waste

The ISGS consulted the Office of the State Fire Marshall's underground storage tank (UST) data base (January 3, 2000) and the IEPA's leaking underground storage tank (LUST) data base (February 11, 2000). The ISGS also visited the alignment and conducted a headspace soil analysis at four sites. The ISGS detected potential contamination in two of the sites, Moore Equipment, Inc. and Smith Airfield. (See Exhibit II-3n.) In addition, the ISGS detected three magnetic anomalies at the Moore Equipment, Inc. site that may indicate the presence of underground storage tanks.

Some of the buildings in the project area were constructed before 1979. Therefore, they may have friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Soils where now-demolished buildings once stood may contain friable asbestos-containing materials.

II.J VISUAL CHARACTERISTICS

The project corridor traverses a primarily rural area. Because of projected economic development and growth, however, some areas adjacent to and near the project corridor are changing to a suburban or urban character. The project corridor may be divided into several visual landscape units.

The portion of the corridor west of Macomb crosses an area of rolling to steep terrain and is primarily a mixture of woodlands and farmlands. This section crosses the East Fork of the La Moine River and skirts the edge of Spring Creek and Wigwam Hollow. The river and creek valleys are bordered by steep hills, cut by deep draws. The project corridor crosses the view-shed of only a few residential units. Most residences are isolated farm structures. A townhouse development is approximately 400 meters (1,300 feet) east of the project corridor on CH 14 and south of Grandview Drive. Macomb Country Estates Subdivision is 550 meters (1,800 feet) east of the project corridor, immediately north of Grandview Drive. This subdivision consists of large

lot single family detached homes. It is at the same or higher elevation than the project corridor. These developments are on the ridge and valley terrain that is prevalent west of Macomb. Deer Ridge is a platted but as yet undeveloped subdivision (with one house presently built) found between 1250N/Adams Street and CH14 1350N. The property also includes a man made lake that crosses the path of the proposed bypass. Western sections of the lake may be visible from the roadway. A berm to the east of the bypass will block views from the roadway.

As the project corridor turns northeast, it passes to within 900 meters (2,950 feet) of Spring Lake and the adjacent parklands. At this point, the project corridor is out of the ridge and valley terrain and follows a broad divide of farmland between Spring Creek and Wigwam Hollow. The project corridor passes at Springlake Road in close proximity to a prairie restoration area of native grasses and forbs.

The section of the project corridor running west to east and located north of Macomb traverses generally flat farmland, mostly used for row crop production. Visually, there are no outstanding landscape features. A group of single family detached homes is located along US 67 where it is crossed by the project corridor. Green Acres Subdivision is also on the north side of Macomb, in close proximity to the project corridor.

The eastern portion of the project corridor (running north to south and located east of Macomb) is on farmland, primarily row crops. This segment crosses the East Fork of the La Moine River, on the northeast side of Macomb. Except for the wooded river valley, there are no outstanding landscape features on this segment of the alignment.

The wooded, ridge and valley terrain west of Macomb and the area around Spring Lake offer the most opportunities for scenic viewing by highway facility users within the project corridor. This segment of the project corridor passes in proximity to diverse habitats, increasing the opportunity for scenic viewing. The north and east segments of the project corridor follow a broad divide through agricultural lands. Northeast of Macomb, the second crossing of the East Fork La Moine River, is wooded. The east segment is also in proximity to several commercial and industrial developments, offering limited scenic viewing.

There are no structures of unique and historic agrarian architecture, nor any other visually significant structures, in proximity to the project corridor.